```
Date Code-12/01/85-C.M. Notes

823E 31          49 33342 1
823F 32          50 33343 2
8240 2F          47 33344 /
8241 30          48 33345 0
8242 31          49 33346 1
8243 2F          47 33347 /
8244 38          56 33348 8
8245 35          53 33349 5
8246 2D          45 33350 -
8247 FF         255 33351 COPY
```

```
All Functions Code-12/01/85-C.M.

99DA 3E01           LD A,01
99DC 32B05C         LD (5CB0),A
99DF C3F200         JP 00F2
```

```
94F6 00          NOP
94F7 00          NOP
94F8 00          NOP
94F9 00          NOP
94FA 00          NOP
94FB 00          NOP
94FC 00          NOP
94FD 012100      LD BC,0021
9500 119B3B      LD DE,3B9B
9503 CDA400      CALL 00A4
9506 F3          DI
9507 CD9317      CALL 1793
950A F3          DI
950B 1809        JR 9516
950D FF          RST 38H
950E FF          RST 38H
950F FF          RST 38H
9510 FF          RST 38H
9511 FF          RST 38H
9512 FF          RST 38H
9513 FF          RST 38H
9514 FF          RST 38H
9515 FF          RST 38H
9516 3E6B        LD A,6B
9518 BD          CP L
9519 2029        JR NZ,9544
951B 3EBB        LD A,BB
951D BC          CP H
951E 2024        JR NZ,9544
9520 3E0E        LD A,0E
9522 B9          CP C
9523 201F        JR NZ,9544
9525 AF          XOR A
9526 B8          CP B
9527 201B        JR NZ,9544
9529 012F00      LD BC,002F
952C 11BC3B      LD DE,3BBC
952F CDB000      CALL 00B0
9532 CDE800      CALL 00E8
9535 CDBD00      CALL 00BD
9538 CDD300      CALL 00D3
953B CDE300      CALL 00E3
953E C2CE17      JP NZ,17CE
9541 C34800      JP 0048
9544 3E4B        LD A,4B
9546 BD          CP L
9547 200E        JR NZ,9557
9549 3ECB        LD A,CB
954B BC          CP H
954C 2009        JR NZ,9557
954E 3E0E        LD A,0E
9550 B9          CP C
9551 2004        JR NZ,9557
9553 AF          XOR A
9554 B8          CP B
9555 28D2        JR Z,9529
9557 012500      LD BC,0025
955A 11BC3B      LD DE,3BBC
955D CDB000      CALL 00B0
9560 010C00      LD BC,000C
9563 119515      LD DE,1595
9566 CDB000      CALL 00B0
9569 011200      LD BC,0012
956C 11EB3B      LD DE,3BEB
956F CDB000      CALL 00B0
9572 CDCB00      CALL 00CB
9575 18C1        JR 9538
```

0027

```
9793 012600      LD BC,0026
9796 1100E0      LD DE,E000
9799 21771C      LD HL,1C77
979C EDB0        LDIR
979E CD00E0      CALL E000
97A1 F3          DI
97A2 010000      LD BC,0000
97A5 110080      LD DE,8000
97A8 210000      LD HL,0000
97AB C5          PUSH BC
97AC 010000      LD BC,0000
97AF 1A          LD A,(DE)
97B0 4F          LD C,A
97B1 AF          XOR A
97B2 ED4A        ADC HL,BC
97B4 3808        JR C,97BE
97B6 13          INC DE
97B7 7A          LD A,D
97B8 FEA0        CP A0
97BA 20F3        JR NZ,97AF
```

```
9549 3ECB          LD A,CB
954B BC            CP H
954C 2009          JR NZ,9557
954E 3E0E          LD A,0E
9550 B9            CP C
9551 2004          JR NZ,9557
9553 AF            XOR A
9554 B8            CP B
9555 28D2          JR Z,9529
9557 012500        LD BC,0025
955A 11BC3B        LD DE,3BBC
955D CDB000        CALL 00B0
9560 010C00        LD BC,000C
9563 119515        LD DE,1595
9566 CDB000        CALL 00B0
9569 011200        LD BC,0012
956C 11EB3B        LD DE,3BEB
956F CDB000        CALL 00B0
9572 CDCB00        CALL 00CB
9575 18C1          JR 9538

97B3 012600        LD BC,0026
97B6 1100E0        LD DE,E000
97B9 21771C        LD HL,1C77
97BC EDB0          LDIR
97BE CD00E0        CALL E000
97A1 F3            DI
97A2 010000        LD BC,0000
97A5 110080        LD DE,8000
97A8 210000        LD HL,0000
97AB C5            PUSH BC
97AC 010000        LD BC,0000
97AF 1A            LD A,(DE)
97B0 4F            LD C,A
97B1 AF            XOR A
97B2 ED4A          ADC HL,BC
97B4 3808          JR C,97BE
97B6 13            INC DE
97B7 7A            LD A,D
97B8 FEA0          CP A0
97BA 20F3          JR NZ,97AF
97BC C1            POP BC
97BD C9            RET
97BE C1            POP BC
97BF 03            INC BC
97C0 13            INC DE
97C1 18E8          JR 97AB
97C3 FF            RST 38H
97C4 FF            RST 38H
97C5 FF            RST 38H
97C6 FF            RST 38H
97C7 FF            RST 38H
97C8 FF            RST 38H
97C9 FF            RST 38H
97CA FF            RST 38H
97CB FF            RST 38H
97CC FF            RST 38H

9C77 F3            DI
9C78 DBF4          IN A,(F4)
9C7A D9            EXX
9C7B 47            LD B,A
9C7C D9            EXX
9C7D DBFF          IN A,(FF)
9C7F CBFF          SET 7,A
9C81 D3FF          OUT (FF),A
9C83 AF            XOR A
9C84 D3F4          OUT (F4),A
9C86 010020        LD BC,2000
9C89 110080        LD DE,8000
9C8C 210000        LD HL,0000
9C8F EDB0          LDIR
9C91 D9            EXX
9C92 78            LD A,B
9C93 D9            EXX
9C94 D3F4          OUT (F4),A
9C96 DBFF          IN A,(FF)
9C98 CBBF          RES 7,A
9C9A D3FF          OUT (FF),A
9C9C C9            RET
```

ΦΦ27

must be A="1"

```
9459 00          NOP
945A 00          NOP
945B 00          NOP
945C 00          NOP
945D 00          NOP
945E 00          NOP
945F 00          NOP
9460 011C00      LD BC,001C
9463 11433B      LD DE,3B43
9466 CDA400      CALL 00A4
9469 F3          DI
946A 012600      LD BC,0026
946D 1100E0      LD DE,E000
9470 21511C      LD HL,1C51
9473 EDB0        LDIR
9475 CD00E0      CALL E000
9478 F3          DI
9479 010000      LD BC,0000
947C 110080      LD DE,8000
947F 210000      LD HL,0000
9482 C5          PUSH BC
9483 010000      LD BC,0000
9486 1A          LD A,(DE)
9487 4F          LD C,A
9488 AF          XOR A
9489 ED4A        ADC HL,BC
948B 3808        JR C,9495
948D 13          INC DE
948E 7A          LD A,D
948F FEC0        CP C0
9491 20F3        JR NZ,9486
9493 1805        JR 949A
9495 C1          POP BC
9496 03          INC BC
9497 13          INC DE
9498 18E8        JR 9482
949A C1          POP BC
949B 3EBD        LD A,BD
949D BD          CP L
949E 2029        JR NZ,94C9
94A0 3EBC        LD A,BC
94A2 BC          CP H
94A3 2024        JR NZ,94C9
94A5 3E1A        LD A,1A
94A7 B9          CP C
94A8 201F        JR NZ,94C9
94AA AF          XOR A
94AB B8          CP B
94AC 201B        JR NZ,94C9
94AE 012A00      LD BC,002A
94B1 115F3B      LD DE,3B5F
94B4 CDB000      CALL 00B0
94B7 CDE800      CALL 00E8
94BA CDBD00      CALL 00BD
94BD CDD300      CALL 00D3
94C0 CDE300      CALL 00E3
94C3 C2F614      JP NZ,14F6
94C6 C34800      JP 0048
94C9 012000      LD BC,0020
94CC 115F3B      LD DE,3B5F
94CF CDB000      CALL 00B0
94D2 010C00      LD BC,000C
94D5 119515      LD DE,1595
94D8 CDB000      CALL 00B0
94DB 011200      LD BC,0012
94DE 11893B      LD DE,3B89
94E1 CDB000      CALL 00B0
94E4 CDCB00      CALL 00CB
94E7 18D4        JR 94BD
94E9 FF          RST 38H
94EA FF          RST 38H
94EB FF          RST 38H
94EC FF          RST 38H
94ED FF          RST 38H
94EE FF          RST 38H
94EF FF          RST 38H
94F0 FF          RST 38H
94F1 FF          RST 38H
94F2 FF          RST 38H
94F3 FF          RST 38H
94F4 FF          RST 38H

9C51 F3          DI
9C52 DBF4        IN A,(F4)
9C54 D9          EXX
9C55 47          LD B,A
9C56 D9          EXX
9C57 DBFF        IN A,(FF)
```

```
94A7  D5              CP  L
94A8  201F            JR  NZ,94C9
94AA  AF              XOR A
94AB  B8              CP  B
94AC  201B            JR  NZ,94C9
94AE  012A00          LD  BC,002A
94B1  115F3B          LD  DE,3B5F
94B4  CDB000          CALL  00B0
94B7  CDE800          CALL  00E8
94BA  CDBD00          CALL  00BD
94BD  CDD300          CALL  00D3
94C0  CDE300          CALL  00E3
94C3  C2F614          JP  NZ,14F6
94C6  C34800          JP  0048
94C9  012000          LD  BC,0020
94CC  115F3B          LD  DE,3B5F
94CF  CDB000          CALL  00B0
94D2  010C00          LD  BC,000C
94D5  119515          LD  DE,1595
94D8  CDB000          CALL  00B0
94DB  011200          LD  BC,0012
94DE  11893B          LD  DE,3B89
94E1  CDB000          CALL  00B0
94E4  CDCB00          CALL  00CB
94E7  18D4            JR  94BD
94E9  FF              RST  38H
94EA  FF              RST  38H
94EB  FF              RST  38H
94EC  FF              RST  38H
94ED  FF              RST  38H
94EE  FF              RST  38H
94EF  FF              RST  38H
94F0  FF              RST  38H
94F1  FF              RST  38H
94F2  FF              RST  38H
94F3  FF              RST  38H
94F4  FF              RST  38H

9C51  F3              DI
9C52  DBF4            IN  A,(F4)
9C54  D9              EXX
9C55  47              LD  B,A
9C56  D9              EXX
9C57  DBFF            IN  A,(FF)
9C59  CBBF            RES  7,A
9C5B  D3FF            OUT  (FF),A
9C5D  AF              XOR A
9C5E  D3F4            OUT  (F4),A
9C60  010040          LD  BC,4000
9C63  110080          LD  DE,8000
9C66  210000          LD  HL,0000
9C69  EDB0            LDIR
9C6B  D9              EXX
9C6C  78              LD  A,B
9C6D  D9              EXX
9C6E  D3F4            OUT  (F4),A
9C70  DBFF            IN  A,(FF)
9C72  CBBF            RES  7,A
9C74  D3FF            OUT  (FF),A
9C76  C9              RET
```

```
97CE 016600        LD BC,0066
97D1 11E219        LD DE,19E2
97D4 CDA400        CALL 00A4
97D7 CD9D1C        CALL 1C9D   <1C9E
97DA 1806          JR 97E2
97DC FF            RST 38H
97DD FF            RST 38H
97DE FF            RST 38H
97DF FF            RST 38H
97E0 FF            RST 38H
97E1 FF            RST 38H
97E2 0E05          LD C,05
97E4 AF            XOR A
97E5 CD3618        CALL 1836
97E8 0D            DEC C
97E9 20F9          JR NZ,97E4
97EB 016600        LD BC,0066
97EE 11481A        LD DE,1A48
97F1 CDA400        CALL 00A4
97F4 CDD300        CALL 00D3
97F7 0E05          LD C,05
97F9 3E02          LD A,02
97FB CD3618        CALL 1836
97FE 0D            DEC C
97FF 20F8          JR NZ,97F9
9801 013A00        LD BC,003A
9804 11AE1A        LD DE,1AAE
9807 CDA400        CALL 00A4
980A CDE800        CALL 00E8
980D CDBD00        CALL 00BD
9810 CDD300        CALL 00D3
9813 CDE300        CALL 00E3
9816 C26C18        JP NZ,186C
9819 C34800        JP 0048
981C 012000        LD BC,0020
981F 11AE1A        LD DE,1AAE
9822 CDA400        CALL 00A4
9825 011A00        LD BC,001A
9828 11E81A        LD DE,1AE8
982B CDB000        CALL 00B0
982E CDE800        CALL 00E8
9831 CDCB00        CALL 00CB
9834 18DA          JR 9810
9836 F3            DI
9837 C5            PUSH BC
9838 F5            PUSH AF
9839 3EF8          LD A,F8
983B FD213A5C      LD IY,5C3A
983F FDA653        AND (IY+53)
9842 C605          ADD A,05
9844 328D5C        LD (5C8D),A
9847 F1            POP AF
9848 32745C        LD (5C74),A
984B DD2100A0      LD IX,A000
984F 210004        LD HL,0400
9852 FB            EI
9853 CD5A07        CALL 075A
9856 F3            DI
9857 F5            PUSH AF
9858 3EF8          LD A,F8
985A FDA653        AND (IY+53)
985D 328D5C        LD (5C8D),A
9860 F1            POP AF
9861 C1            POP BC
9862 FB            EI
9863 C9            RET
9864 211C18        LD HL,181C
9867 C1            POP BC
9868 E5            PUSH HL
9869 C5            PUSH BC
986A 18EA          JR 9856

9C9D CDD300        CALL 00D3
9CA0 011100        LD BC,0011
9CA3 1100A0        LD DE,A000
9CA6 21021B        LD HL,1B02
9CA9 EDB0          LDIR
9CAB C9            RET
```

New 'Save' Control Routine

```
8970 E5            PUSH HL
8971 1811          JR 8984
8973 FF            RST 38H
8974 FF            RST 38H
8975 FF            RST 38H
8976 FF            RST 38H
8977 FF            RST 38H
```

```
9834 18DA              JR 9810
9836 F3                DI
9837 C5                PUSH BC
9838 F5                PUSH AF
9839 3EF8              LD A,F8
983B FD213A5C          LD IY,5C3A
983F FDA653            AND (IY+53)
9842 C605              ADD A,05
9844 328D5C            LD (5C8D),A
9847 F1                POP AF
9848 32745C            LD (5C74),A
984B DD2100A0          LD IX,A000
984F 210004            LD HL,0400
9852 FB                EI
9853 CD5A07            CALL 075A
9856 F3                DI
9857 F5                PUSH AF
9858 3EF8              LD A,F8
985A FDA653            AND (IY+53)
985D 328D5C            LD (5C8D),A
9860 F1                POP AF
9861 C1                POP BC
9862 FB                EI
9863 C9                RET
9864 211C18            LD HL,181C
9867 C1                POP BC
9868 E5                PUSH HL
9869 C5                PUSH BC
986A 18EA              JR 9856

9C9D CDD300            CALL 00D3
9CA0 011100            LD BC,0011
9CA3 1100A0            LD DE,A000
9CA6 21021B            LD HL,1B02
9CA9 EDB0              LDIR
9CAB C9                RET

New 'Save' Control Routine

8970 E5                PUSH HL
8971 1811              JR 8984
8973 FF                RST 38H
8974 FF                RST 38H
8975 FF                RST 38H
8976 FF                RST 38H
8977 FF                RST 38H
8978 FF                RST 38H
8979 FF                RST 38H
897A FF                RST 38H
897B FF                RST 38H
897C FF                RST 38H
897D FF                RST 38H
897E FF                RST 38H
897F FF                RST 38H
8980 FF                RST 38H
8981 FF                RST 38H
8982 FF                RST 38H
8983 FF                RST 38H
8984 DDE5              PUSH IX
8986 111100            LD DE,0011
8989 AF                XOR A
898A CDC204            CALL 04C2
898D DDE1              POP IX
898F 0632              LD B,32
8991 76                HALT
8992 10FD              DJNZ,8991
8994 DD5E0B            LD E,(IX+0B)
8997 DD560C            LD D,(IX+0C)
899A 3EFF              LD A,FF
899C DDE1              POP IX
899E C3C204            JP 04C2
```

```
Home RAM Test-12/01/85-C. Miles

80F2 011C00         LD BC,001C
80F5 11283A         LD DE,3A28
80F8 CDA400         CALL 00A4
80FB F3             DI
80FC D9             EXX
80FD 160A           LD D,0A
80FF D9             EXX
8100 210040         LD HL,4000
8103 7E             LD A,(HL)
8104 57             LD D,A
8105 AF             XOR A
8106 5F             LD E,A
8107 77             LD (HL),A
8108 00             NOP
8109 00             NOP
810A 00             NOP
810B 00             NOP
810C 00             NOP
810D 00             NOP
810E 7E             LD A,(HL)
810F A7             AND A
8110 2058           JR NZ,816A
8112 3C             INC A
8113 0608           LD B,08
8115 4F             LD C,A
8116 5F             LD E,A
8117 77             LD (HL),A
8118 00             NOP
8119 00             NOP
811A 00             NOP
811B 00             NOP
811C 00             NOP
811D 00             NOP
811E 7E             LD A,(HL)
811F B9             CP C
8120 2048           JR NZ,816A
8122 CB27           SLA A
8124 10EF           DJNZ,8115
8126 3EFF           LD A,FF
8128 5F             LD E,A
8129 77             LD (HL),A
812A 00             NOP
812B 00             NOP
812C 00             NOP
812D 00             NOP
812E 00             NOP
812F 00             NOP
8130 7E             LD A,(HL)
8131 FEFF           CP FF
8133 2035           JR NZ,816A
8135 7A             LD A,D
8136 77             LD (HL),A
8137 23             INC HL
8138 7C             LD A,H
8139 A7             AND A
813A 20C7           JR NZ,8103
813C D9             EXX
813D 15             DEC D
813E D9             EXX
813F 20BF           JR NZ,8100
8141 011000         LD BC,0010
8144 11443A         LD DE,3A44
8147 CDB000         CALL 00B0
814A 012900         LD BC,0029
814D 11603A         LD DE,3A60
8150 CDB000         CALL 00B0
8153 CDE800         CALL 00E8
8156 3E01           LD A,01
8158 32B15C         LD (5CB1),A
815B CDBD00         CALL 00BD
815E CDD300         CALL 00D3
8161 CDE300         CALL 00E3
8164 C24802         JP NZ,0248
8167 C34800         JP 0048
816A AF             XOR A
816B 32B15C         LD (5CB1),A
816E 7A             LD A,D
816F 77             LD (HL),A
8170 E5             PUSH HL
8171 7C             LD A,H
8172 07             RLCA
8173 3804           JR C,8179
8175 1601           LD D,01
8177 1809           JR 8182
8179 07             RLCA
817A 3804           JR C,8180
817C 1602           LD D,02
```

```
8172 07          RLCA
8173 3804        JR C,8179
8175 1601        LD D,01
8177 1809        JR 8182
8179 07          RLCA
817A 3804        JR C,8180
817C 1602        LD D,02
817E 1802        JR 8182
8180 1600        LD D,00
8182 7B          LD A,E
8183 07          RLCA
8184 380E        JR C,8194
8186 07          RLCA
8187 380B        JR C,8194
8189 07          RLCA
818A 3808        JR C,8194
818C 07          RLCA
818D 3805        JR C,8194
818F 7A          LD A,D
8190 5A          LD E,D
8191 C603        ADD A,03
8193 57          LD D,A
8194 D5          PUSH DE
8195 010C00      LD BC,000C
8198 11543A      LD DE,3A54
819B CDB000      CALL 00B0
819E D1          POP DE
819F D5          PUSH DE
81A0 7A          LD A,D
81A1 A7          AND A
81A2 200B        JR NZ,81AF
81A4 3E55        LD A,55
81A6 D7          RST 10H
81A7 3E31        LD A,31
81A9 D7          RST 10H
81AA 3E38        LD A,38
81AC D7          RST 10H
81AD 183F        JR 81EE
81AF FE01        CP 01
81B1 2008        JR NZ,81BB
81B3 3E55        LD A,55
81B5 D7          RST 10H
81B6 3E37        LD A,37
81B8 D7          RST 10H
81B9 1875        JR 8230
81BB FE02        CP 02
81BD 200B        JR NZ,81CA
81BF 3E55        LD A,55
81C1 D7          RST 10H
81C2 3E31        LD A,31
81C4 D7          RST 10H
81C5 3E33        LD A,33
81C7 D7          RST 10H
81C8 1824        JR 81EE
81CA FE03        CP 03
81CC 200B        JR NZ,81D9
81CE 3E55        LD A,55
81D0 D7          RST 10H
81D1 3E31        LD A,31
81D3 D7          RST 10H
81D4 3E37        LD A,37
81D6 D7          RST 10H
81D7 1815        JR 81EE
81D9 FE04        CP 04
81DB 2008        JR NZ,81E5
81DD 3E55        LD A,55
81DF D7          RST 10H
81E0 3E36        LD A,36
81E2 D7          RST 10H
81E3 184B        JR 8230
81E5 3E55        LD A,55
81E7 D7          RST 10H
81E8 3E31        LD A,31
81EA D7          RST 10H
81EB 3E32        LD A,32
81ED D7          RST 10H
81EE 010D00      LD BC,000D
81F1 118F3A      LD DE,3A8F
81F4 CDB000      CALL 00B0
81F7 1840        JR 8239
81F9 D1          POP DE
81FA E1          POP HL
81FB 7B          LD A,E
81FC A7          AND A
81FD 2810        JR Z,820F
81FF FE01        CP 01
8201 2007        JR NZ,820A
8203 210080      LD HL,8000
8206 F3          DI
8207 C30301      JP 0103
```

```
81AA 3E38          LD A,38
81AC D7            RST 10H
81AD 183F          JR 81EE
81AF FE01          CP 01
81B1 2008          JR NZ,81BB
81B3 3E55          LD A,55
81B5 D7            RST 10H
81B6 3E37          LD A,37
81B8 D7            RST 10H
81B9 1875          JR 8230
81BB FE02          CP 02
81BD 200B          JR NZ,81CA
81BF 3E55          LD A,55
81C1 D7            RST 10H
81C2 3E31          LD A,31
81C4 D7            RST 10H
81C5 3E33          LD A,33
81C7 D7            RST 10H
81C8 1824          JR 81EE
81CA FE03          CP 03
81CC 200B          JR NZ,81D9
81CE 3E55          LD A,55
81D0 D7            RST 10H
81D1 3E31          LD A,31
81D3 D7            RST 10H
81D4 3E37          LD A,37
81D6 D7            RST 10H
81D7 1815          JR 81EE
81D9 FE04          CP 04
81DB 2008          JR NZ,81E5
81DD 3E55          LD A,55
81DF D7            RST 10H
81E0 3E36          LD A,36
81E2 D7            RST 10H
81E3 184B          JR 8230
81E5 3E55          LD A,55
81E7 D7            RST 10H
81E8 3E31          LD A,31
81EA D7            RST 10H
81EB 3E32          LD A,32
81ED D7            RST 10H
81EE 010D00        LD BC,000D
81F1 118F3A        LD DE,3A8F
81F4 CDB000        CALL 00B0
81F7 1840          JR 8239
81F9 D1            POP DE
81FA E1            POP HL
81FB 7B            LD A,E
81FC A7            AND A
81FD 2810          JR Z,820F
81FF FE01          CP 01
8201 2007          JR NZ,820A
8203 210080        LD HL,8000
8206 F3            DI
8207 C30301        JP 0103
820A 2100C0        LD HL,C000
820D 18F7          JR 8206
820F 011000        LD BC,0010
8212 11443A        LD DE,3A44
8215 CDB000        CALL 00B0
8218 011F00        LD BC,001F
821B 11603A        LD DE,3A60
821E CDB000        CALL 00B0
8221 010C00        LD BC,000C
8224 119515        LD DE,1595
8227 CDB000        CALL 00B0
822A CDE800        CALL 00E8
822D C35E01        JP 015E
8230 011300        LD BC,0013
8233 11893A        LD DE,3A89
8236 CDB000        CALL 00B0
8239 CDCB00        CALL 00CB
823C 18BB          JR 81F9
```

```
Keyboard Test-12/01/85-C. Miles

986C 01BD00          LD BC,00BD
986F 111318          LD DE,1813
9872 CDA400          CALL 00A4
9875 0E24            LD C,24
9877 CD5F19          CALL 195F
987A 3041            JR NC,98BD
987C 0E03            LD C,03
987E CD9419          CALL 1994
9881 303A            JR NC,98BD
9883 0E25            LD C,25
9885 CD5F19          CALL 195F
9888 3033            JR NC,98BD
988A 0E02            LD C,02
988C CD9419          CALL 1994
988F 302C            JR NC,98BD
9891 0E26            LD C,26
9893 CD5F19          CALL 195F
9896 3025            JR NC,98BD
9898 0E01            LD C,01
989A CD9419          CALL 1994
989D 301E            JR NC,98BD
989F 0E27            LD C,27
98A1 CD5F19          CALL 195F
98A4 3017            JR NC,98BD
98A6 0E00            LD C,00
98A8 CD9419          CALL 1994
98AB 3010            JR NC,98BD
98AD CD8E02          CALL 028E
98B0 3E27            LD A,27
98B2 BB              CP E
98B3 280C            JR Z,98C1
98B5 3EFF            LD A,FF
98B7 BB              CP E
98B8 28F3            JR Z,98AD
98BA CD541F          CALL 1F54
98BD 3066            JR NC,9925
98BF 18EC            JR 98AD
98C1 CD7F19          CALL 197F
98C4 CD8E02          CALL 028E
98C7 3E20            LD A,20
98C9 BB              CP E
98CA 280C            JR Z,98D8
98CC 3EFF            LD A,FF
98CE BB              CP E
98CF 28F3            JR Z,98C4
98D1 CD541F          CALL 1F54
98D4 304F            JR NC,9925
98D6 18EC            JR 98C4
98D8 CD7F19          CALL 197F
98DB 0E04            LD C,04
98DD CD3919          CALL 1939
98E0 3043            JR NC,9925
98E2 0E03            LD C,03
98E4 CD3919          CALL 1939
98E7 303C            JR NC,9925
98E9 0E0B            LD C,0B
98EB CD3919          CALL 1939
98EE 3035            JR NC,9925
98F0 0E13            LD C,13
98F2 CD3919          CALL 1939
98F5 302E            JR NC,9925
98F7 0E10            LD C,10
98F9 CDB419          CALL 19B4
98FC 3027            JR NC,9925
98FE 0E07            LD C,07
9900 CDB419          CALL 19B4
9903 3020            JR NC,9925
9905 0E09            LD C,09
9907 CDB419          CALL 19B4
990A 3019            JR NC,9925
990C 011D00          LD BC,001D
990F 11D01B          LD DE,1BD0
9912 CDA400          CALL 00A4
9915 CDE800          CALL 00E8
9918 CDBD00          CALL 00BD
991B CDD300          CALL 00D3
991E AF              XOR A
991F 32B05C          LD (5CB0),A
9922 C34800          JP 0048
9925 016500          LD BC,0065
9928 11ED1B          LD DE,1BED
992B CDA400          CALL 00A4
992E 00              NOP
992F 00              NOP
                     NOP
```

```
9910 CDD300          CALL 00D3
991B CDD300          CALL 00D3
991E AF              XOR A
991F 32B05C          LD (5CB0),A
9922 C34800          JP 0048
9925 016500          LD BC,0065
9928 11ED1B          LD DE,1BED
992B CDA400          CALL 00A4
992E 00              NOP
992F 00              NOP
9930 00              NOP
9931 CDE800          CALL 00E8
9934 CDCB00          CALL 00CB
9937 18E2            JR 991B
9939 C5              PUSH BC
993A CD8E02          CALL 028E
993D C1              POP BC
993E 79              LD A,C
993F BB              CP E
9940 280C            JR Z,994E
9942 3EFF            LD A,FF
9944 BB              CP E
9945 28F2            JR Z,9939
9947 CD541F          CALL 1F54
994A 30D9            JR NC,9925
994C 18EB            JR 9939
994E 3E27            LD A,27
9950 BA              CP D
9951 2807            JR Z,995A
9953 3EFF            LD A,FF
9955 BA              CP D
9956 28E1            JR Z,9939
9958 18ED            JR 9947
995A CD7F19          CALL 197F
995D 37              SCF
995E C9              RET
995F 0605            LD B,05
9961 C5              PUSH BC
9962 CD8E02          CALL 028E
9965 C1              POP BC
9966 7B              LD A,E
9967 B9              CP C
9968 280A            JR Z,9974
996A FEFF            CP FF
996C 28F3            JR Z,9961
996E CD541F          CALL 1F54
9971 D0              RET NC
9972 18ED            JR 9961
9974 CD7F19          CALL 197F
9977 79              LD A,C
9978 D608            SUB 08
997A 4F              LD C,A
997B 10E4            DJNZ,9961
997D 37              SCF
997E C9              RET
997F C5              PUSH BC
9980 3E7D            LD A,7D
9982 01CCCD          LD BC,CDCC
9985 114CCC          LD DE,CC4C
9988 CDB62A          CALL 2AB6
998B AF              XOR A
998C CD282D          CALL 2D28
998F CDF803          CALL 03F8
9992 C1              POP BC
9993 C9              RET
9994 0605            LD B,05
9996 C5              PUSH BC
9997 CD8E02          CALL 028E
999A C1              POP BC
999B 7B              LD A,E
999C B9              CP C
999D 280A            JR Z,99A9
999F FEFF            CP FF
99A1 28F3            JR Z,9996
99A3 CD541F          CALL 1F54
99A6 D0              RET NC
99A7 18ED            JR 9996
99A9 CD7F19          CALL 197F
99AC 79              LD A,C
99AD C608            ADD A,08
99AF 4F              LD C,A
99B0 10E4            DJNZ,9996
99B2 37              SCF
99B3 C9              RET
99B4 C5              PUSH BC
99B5 CD8E02          CALL 028E
99B8 C1              POP BC
99B9 79              LD A,C
99BA BB              CP E
99BB 280D            JR Z,99CA
```

```
9961 C5          PUSH BC
9962 CD8E02      CALL 028E
9965 C1          POP BC
9966 7B          LD A,E
9967 B9          CP C
9968 280A        JR Z,9974
996A FEFF        CP FF
996C 28F3        JR Z,9961
996E CD541F      CALL 1F54
9971 D0          RET NC
9972 18ED        JR 9961
9974 CD7F19      CALL 197F
9977 79          LD A,C
9978 D608        SUB 08
997A 4F          LD C,A
997B 10E4        DJNZ,9961
997D 37          SCF
997E C9          RET
997F C5          PUSH BC
9980 3E7D        LD A,7D
9982 01CCCD      LD BC,CDCC
9985 114CCC      LD DE,CC4C
9988 CDB62A      CALL 2AB6
998B AF          XOR A
998C CD282D      CALL 2D28
998F CDF803      CALL 03F8
9992 C1          POP BC
9993 C9          RET
9994 0605        LD B,05
9996 C5          PUSH BC
9997 CD8E02      CALL 028E
999A C1          POP BC
999B 7B          LD A,E
999C B9          CP C
999D 280A        JR Z,99A9
999F FEFF        CP FF
99A1 28F3        JR Z,9996
99A3 CD541F      CALL 1F54
99A6 D0          RET NC
99A7 18ED        JR 9996
99A9 CD7F19      CALL 197F
99AC 79          LD A,C
99AD C608        ADD A,08
99AF 4F          LD C,A
99B0 10E4        DJNZ,9996
99B2 37          SCF
99B3 C9          RET
99B4 C5          PUSH BC
99B5 CD8E02      CALL 028E
99B8 C1          POP BC
99B9 79          LD A,C
99BA BB          CP E
99BB 280D        JR Z,99CA
99BD 3EFF        LD A,FF
99BF BB          CP E
99C0 28F2        JR Z,99B4
99C2 CD541F      CALL 1F54
99C5 D22519      JP NC,1925
99C8 18EA        JR 99B4
99CA 3E18        LD A,18
99CC BA          CP D
99CD 2806        JR Z,99D5
99CF 3EFF        LD A,FF
99D1 28E1        JR Z,99B4
99D3 18ED        JR 99C2
99D5 CD7F19      CALL 197F
99D8 37          SCF
99D9 C9          RET
```

```
CPU Test-12/01/85-C. Miles

8248 F3             DI
8249 011700         LD BC,0017
824C 11F53A         LD DE,3AF5
824F CDA400         CALL 00A4
8252 F5             PUSH AF
8253 C5             PUSH BC
8254 D5             PUSH DE
8255 E5             PUSH HL
8256 DDE5           PUSH IX
8258 FDE5           PUSH IY
825A 08             EX AF,AF'
825B D9             EXX
825C F5             PUSH AF
825D C5             PUSH BC
825E D5             PUSH DE
825F E5             PUSH HL
8260 D9             EXX
8261 08             EX AF,AF'
8262 CD4412         CALL 1244
8265 ED57           LD A,I
8267 3D             DEC A
8268 ED47           LD I,A
826A 08             EX AF,AF'
826B D9             EXX
826C CD4412         CALL 1244
826F D9             EXX
8270 08             EX AF,AF'
8271 ED57           LD A,I
8273 3C             INC A
8274 ED47           LD I,A
8276 DD210000       LD IX,0000
827A DDE5           PUSH IX
827C C1             POP BC
827D AF             XOR A
827E B8             CP B
827F C2F811         JP NZ,11F8
8282 B9             CP C
8283 C2F811         JP NZ,11F8
8286 0C             INC C
8287 C5             PUSH BC
8288 C5             PUSH BC
8289 DDE1           POP IX
828B C3BF02         JP 02BF

82BF D1             POP DE
82C0 DDE5           PUSH IX
82C2 C1             POP BC
82C3 7B             LD A,E
82C4 B9             CP C
82C5 C2F811         JP NZ,11F8
82C8 7A             LD A,D
82C9 B8             CP B
82CA C2F811         JP NZ,11F8
82CD A7             AND A
82CE CB21           SLA C
82D0 30B5           JR NC,8287
82D2 0E00           LD C,00
82D4 03             INC BC
82D5 C5             PUSH BC
82D6 C5             PUSH BC
82D7 DDE1           POP IX
82D9 D1             POP DE
82DA DDE5           PUSH IX
82DC C1             POP BC
82DD 7B             LD A,E
82DE B9             CP C
82DF C2F811         JP NZ,11F8
82E2 7A             LD A,D
82E3 B8             CP B
82E4 C2F811         JP NZ,11F8
82E7 A7             AND A
82E8 CB20           SLA B
82EA 30E9           JR NC,82D5
82EC DD21FFFF       LD IX,FFFF
82F0 DDE5           PUSH IX
82F2 C1             POP BC
82F3 3EFF           LD A,FF
82F5 B8             CP B
82F6 C2F811         JP NZ,11F8
82F9 B9             CP C
82FA C2F811         JP NZ,11F8
82FD FD210000       LD IY,0000
8301 FDE5           PUSH IY
8303 C1             POP BC
8304 AF             XOR A
8305 B8             CP B
8306 C2F811         JP NZ,11F8
8309 B9             CP C
```

ERROR

INC B

```
82C5 C2F811          JP NZ,11F8
82C8 7A              LD A,D
82C9 B8              CP B
82CA C2F811          JP NZ,11F8
82CD A7              AND A
82CE CB21            SLA C
82D0 30B5            JR NC,8287
82D2 0E00            LD C,00
82D4 03              INC BC
82D5 C5              PUSH BC
82D6 C5              PUSH BC
82D7 DDE1            POP IX
82D9 D1              POP DE
82DA DDE5            PUSH IX
82DC C1              POP BC
82DD 7B              LD A,E
82DE B9              CP C
82DF C2F811          JP NZ,11F8
82E2 7A              LD A,D
82E3 B8              CP B
82E4 C2F811          JP NZ,11F8
82E7 A7              AND A
82E8 CB20            SLA B
82EA 30E9            JR NC,82D5
82EC DD21FFFF        LD IX,FFFF
82F0 DDE5            PUSH IX
82F2 C1              POP BC
82F3 3EFF            LD A,FF
82F5 B8              CP B
82F6 C2F811          JP NZ,11F8
82F9 B9              CP C
82FA C2F811          JP NZ,11F8
82FD FD210000        LD IY,0000
8301 FDE5            PUSH IY
8303 C1              POP BC
8304 AF              XOR A
8305 B8              CP B
8306 C2F811          JP NZ,11F8
8309 B9              CP C
830A C2F811          JP NZ,11F8
830D 0C              INC C
830E C5              PUSH BC
830F C5              PUSH BC
8310 FDE1            POP IY
8312 D1              POP DE
8313 FDE5            PUSH IY
8315 C1              POP BC
8316 7B              LD A,E
8317 B9              CP C
8318 C2F811          JP NZ,11F8
831B 7A              LD A,D
831C B8              CP B
831D C2F811          JP NZ,11F8
8320 A7              AND A
8321 CB21            SLA C
8323 30E9            JR NC,830E
8325 0E00            LD C,00
8327 04              INC B
8328 C5              PUSH BC
8329 C5              PUSH BC
832A FDE1            POP IY
832C D1              POP DE
832D FDE5            PUSH IY
832F C1              POP BC
8330 7B              LD A,E
8331 B9              CP C
8332 C2F811          JP NZ,11F8
8335 7A              LD A,D
8336 B8              CP B
8337 C2F811          JP NZ,11F8
833A A7              AND A
833B CB20            SLA B
833D 30E9            JR NC,8328
833F FD21FFFF        LD IY,FFFF
8343 FDE5            PUSH IY
8345 C1              POP BC
8346 3EFF            LD A,FF
8348 B8              CP B
8349 C2F811          JP NZ,11F8
834C B9              CP C
834D C2F811          JP NZ,11F8
8350 210000          LD HL,0000
8353 39              ADD HL,SP
8354 EB              EX DE,HL
8355 210000          LD HL,0000
8358 F9              LD SP,HL
8359 39              ADD HL,SP
835A AF              XOR A
835B BD              CP L
835C C23812          JP NZ,1238
835F BC              CP H
```

ERROR

INC B

```
832A FDE1           POP  IY
832C D1             POP  DE
832D FDE5           PUSH IY
832F C1             POP  BC
8330 7B             LD   A,E
8331 B9             CP   C
8332 C2F811         JP   NZ,11F8
8335 7A             LD   A,D
8336 B8             CP   B
8337 C2F811         JP   NZ,11F8
833A A7             AND  A
833B CB20           SLA  B
833D 30E9           JR   NC,8328
833F FD21FFFF       LD   IY,FFFF
8343 FDE5           PUSH IY
8345 C1             POP  BC
8346 3EFF           LD   A,FF
8348 B8             CP   B
8349 C2F811         JP   NZ,11F8
834C B9             CP   C
834D C2F811         JP   NZ,11F8
8350 210000         LD   HL,0000
8353 39             ADD  HL,SP
8354 EB             EX   DE,HL
8355 210000         LD   HL,0000
8358 F9             LD   SP,HL
8359 39             ADD  HL,SP
835A AF             XOR  A
835B BD             CP   L
835C C23812         JP   NZ,1238
835F BC             CP   H
8360 C23812         JP   NZ,1238
8363 010100         LD   BC,0001
8366 60             LD   H,B
8367 69             LD   L,C
8368 F9             LD   SP,HL
8369 210000         LD   HL,0000
836C 39             ADD  HL,SP
836D 7C             LD   A,H
836E B8             CP   B
836F C23812         JP   NZ,1238
8372 7D             LD   A,L
8373 B9             CP   C
8374 C23812         JP   NZ,1238
8377 A7             AND  A
8378 CB21           SLA  C
837A 30EA           JR   NC,8366
837C 0E00           LD   C,00
837E 04             INC  B
837F 60             LD   H,B
8380 69             LD   L,C
8381 F9             LD   SP,HL
8382 210000         LD   HL,0000
8385 39             ADD  HL,SP
8386 7C             LD   A,H
8387 B8             CP   B
8388 C23812         JP   NZ,1238
838B 7D             LD   A,L
838C B9             CP   C
838D C23812         JP   NZ,1238
8390 A7             AND  A
8391 CB20           SLA  B
8393 30EA           JR   NC,837F
8395 21FFFF         LD   HL,FFFF
8398 F9             LD   SP,HL
8399 23             INC  HL
839A 39             ADD  HL,SP
839B 3EFF           LD   A,FF
839D BC             CP   H
839E C23812         JP   NZ,1238
83A1 BD             CP   L
83A2 C23812         JP   NZ,1238
83A5 EB             EX   DE,HL
83A6 F9             LD   SP,HL
83A7 ED57           LD   A,I
83A9 57             LD   D,A
83AA AF             XOR  A
83AB 47             LD   B,A
83AC ED47           LD   I,A
83AE ED57           LD   A,I
83B0 B8             CP   B
83B1 C3AA04         JP   04AA
83B4 00             NOP

84AA C23C12         JP   NZ,123C
84AD AF             XOR  A
84AE 04             INC  B
84AF 78             LD   A,B
84B0 ED47           LD   I,A
84B2 ED57           LD   A,I
```

```
8380 59             LD L,C
8381 F9             LD SP,HL
8382 210000         LD HL,0000
8385 39             ADD HL,SP
8386 7C             LD A,H
8387 B8             CP B
8388 C23812         JP NZ,1238
838B 7D             LD A,L
838C B9             CP C
838D C23812         JP NZ,1238
8390 A7             AND A
8391 CB20           SLA B
8393 30EA           JR NC,837F
8395 21FFFF         LD HL,FFFF
8398 F9             LD SP,HL
8399 23             INC HL
839A 39             ADD HL,SP
839B 3EFF           LD A,FF
839D BC             CP H
839E C23812         JP NZ,1238
83A1 BD             CP L
83A2 C23812         JP NZ,1238
83A5 EB             EX DE,HL
83A6 F9             LD SP,HL
83A7 ED57           LD A,I
83A9 57             LD D,A
83AA AF             XOR A
83AB 47             LD B,A
83AC ED47           LD I,A
83AE ED57           LD A,I
83B0 B8             CP B
83B1 C3AA04         JP 04AA
83B4 00             NOP

84AA C23C12         JP NZ,123C
84AD AF             XOR A
84AE 04             INC B
84AF 78             LD A,B
84B0 ED47           LD I,A
84B2 ED57           LD A,I
84B4 B8             CP B
84B5 C23C12         JP NZ,123C
84B8 A7             AND A
84B9 CB20           SLA B
84BB 78             LD A,B
84BC 30F2           JR NC,84B0
84BE C3B711         JP 11B7
84C1 00             NOP

91B7 3EFF           LD A,FF
91B9 ED47           LD I,A
91BB ED57           LD A,I
91BD FEFF           CP FF
91BF 207B           JR NZ,923C
91C1 7A             LD A,D
91C2 ED47           LD I,A
91C4 08             EX AF,AF'
91C5 D9             EXX
91C6 E1             POP HL
91C7 D1             POP DE
91C8 C1             POP BC
91C9 F1             POP AF
91CA D9             EXX
91CB 08             EX AF,AF'
91CC FDE1           POP IY
91CE DDE1           POP IX
91D0 E1             POP HL
91D1 D1             POP DE
91D2 C1             POP BC
91D3 F1             POP AF
91D4 012500         LD BC,0025
91D7 110C3B         LD DE,3B0C
91DA CDB000         CALL 00B0
91DD 1807           JR 91E6
91DF FF             RST 38H
91E0 FF             RST 38H
91E1 FF             RST 38H
91E2 FF             RST 38H
91E3 FF             RST 38H
91E4 FF             RST 38H
91E5 FF             RST 38H
91E6 CDE800         CALL 00E8
91E9 CDBD00         CALL 00BD
91EC CDD300         CALL 00D3
91EF CDE300         CALL 00E3
91F2 C26B13         JP NZ,136B
91F5 C34800         JP 0048
91F8 ED57           LD A,I
91FA FE3F           CP 3F
91FC 2805           JR Z,9203
```

```
91C3 ED47          LD I,A
91C4 08            EX AF,AF'
91C5 D9            EXX
91C6 E1            POP HL
91C7 D1            POP DE
91C8 C1            POP BC
91C9 F1            POP AF
91CA D9            EXX
91CB 08            EX AF,AF'
91CC FDE1          POP IY
91CE DDE1          POP IX
91D0 E1            POP HL
91D1 D1            POP DE
91D2 C1            POP BC
91D3 F1            POP AF
91D4 012500        LD BC,0025
91D7 110C3B        LD DE,3B0C
91DA CDB000        CALL 00B0
91DD 1807          JR 91E6
91DF FF            RST 38H
91E0 FF            RST 38H
91E1 FF            RST 38H
91E2 FF            RST 38H
91E3 FF            RST 38H
91E4 FF            RST 38H
91E5 FF            RST 38H
91E6 CDE800        CALL 00E8
91E9 CDBD00        CALL 00BD
91EC CDD300        CALL 00D3
91EF CDE300        CALL 00E3
91F2 C26B13        JP NZ,136B
91F5 C34800        JP 0048
91F8 ED57          LD A,I
91FA FE3F          CP 3F
91FC 2805          JR Z,9203
91FE D9            EXX
91FF 08            EX AF,AF'
9200 3C            INC A
9201 ED47          LD I,A
9203 011B00        LD BC,001B
9206 110C3B        LD DE,3B0C
9209 CDB000        CALL 00B0
920C 010C00        LD BC,000C
920F 119515        LD DE,1595
9212 CDB000        CALL 00B0
9215 011200        LD BC,0012
9218 11313B        LD DE,3B31
921B CDB000        CALL 00B0
921E CDE800        CALL 00E8
9221 CDCB00        CALL 00CB
9224 F3            DI
9225 08            EX AF,AF'
9226 D9            EXX
9227 E1            POP HL
9228 D1            POP DE
9229 C1            POP BC
922A F1            POP AF
922B D9            EXX
922C 08            EX AF,AF'
922D FDE1          POP IY
922F DDE1          POP IX
9231 E1            POP HL
9232 D1            POP DE
9233 C1            POP BC
9234 F1            POP AF
9235 FB            EI
9236 18B4          JR 91EC
9238 EB            EX DE,HL
9239 F9            LD SP,HL
923A 18C7          JR 9203
923C 7A            LD A,D
923D ED47          LD I,A
923F 18C2          JR 9203
9241 C1            POP BC
9242 18BF          JR 9203
9244 AF            XOR A
9245 20FA          JR NZ,9241
9247 3C            INC A
9248 0608          LD B,08
924A BF            CP A
924B 20F4          JR NZ,9241
924D CB27          SLA A
924F 10F9          DJNZ,924A
9251 3EFF          LD A,FF
9253 FEFF          CP FF
9255 20EA          JR NZ,9241
9257 AF            XOR A
9258 47            LD B,A
9259 B8            CP B
925A 20E5          JR NZ,9241
```

```
9228 D1          POP  DE
9229 C1          POP  BC
922A F1          POP  AF
922B D9          EXX
922C 08          EX   AF,AF'
922D FDE1        POP  IY
922F DDE1        POP  IX
9231 E1          POP  HL
9232 D1          POP  DE
9233 C1          POP  BC
9234 F1          POP  AF
9235 FB          EI
9236 18B4        JR   91EC
9238 EB          EX   DE,HL
9239 F9          LD   SP,HL
923A 18C7        JR   9203
923C 7A          LD   A,D
923D ED47        LD   I,A
923F 18C2        JR   9203
9241 C1          POP  BC
9242 18BF        JR   9203
9244 AF          XOR  A
9245 20FA        JR   NZ,9241
9247 3C          INC  A
9248 0608        LD   B,08
924A BF          CP   A
924B 20F4        JR   NZ,9241
924D CB27        SLA  A
924F 10F9        DJNZ,924A
9251 3EFF        LD   A,FF
9253 FEFF        CP   FF
9255 20EA        JR   NZ,9241
9257 AF          XOR  A
9258 47          LD   B,A
9259 B8          CP   B
925A 20E5        JR   NZ,9241
925C 3C          INC  A
925D 47          LD   B,A
925E B8          CP   B
925F 20E0        JR   NZ,9241
9261 A7          AND  A
9262 CB27        SLA  A
9264 30F7        JR   NC,925D
9266 3EFF        LD   A,FF
9268 47          LD   B,A
9269 B8          CP   B
926A 20D5        JR   NZ,9241
926C AF          XOR  A
926D 0608        LD   B,08
926F 4F          LD   C,A
9270 B9          CP   C
9271 20CE        JR   NZ,9241
9273 3C          INC  A
9274 4F          LD   C,A
9275 B9          CP   C
9276 20C9        JR   NZ,9241
9278 CB27        SLA  A
927A 10F8        DJNZ,9274
927C 3EFF        LD   A,FF
927E 4F          LD   C,A
927F B9          CP   C
9280 20BF        JR   NZ,9241
9282 AF          XOR  A
9283 0608        LD   B,08
9285 57          LD   D,A
9286 BA          CP   D
9287 20B8        JR   NZ,9241
9289 3C          INC  A
928A 57          LD   D,A
928B BA          CP   D
928C 20B3        JR   NZ,9241
928E CB27        SLA  A
9290 10F8        DJNZ,928A
9292 3EFF        LD   A,FF
9294 57          LD   D,A
9295 BA          CP   D
9296 20A9        JR   NZ,9241
9298 AF          XOR  A
9299 0608        LD   B,08
929B 5F          LD   E,A
929C BB          CP   E
929D 20A2        JR   NZ,9241
929F 3C          INC  A
92A0 5F          LD   E,A
92A1 BB          CP   E
92A2 209D        JR   NZ,9241
92A4 CB27        SLA  A
92A6 10F8        DJNZ,92A0
92A8 3EFF        LD   A,FF
92AA 5F          LD   E,A
92AB BB          CP   E
```

```
9287 20B6           JR NZ,9241
9289 3C             INC A
928A 57             LD D,A
928B BA             CP D
928C 20B3           JR NZ,9241
928E CB27           SLA A
9290 10F8           DJNZ,928A
9292 3EFF           LD A,FF
9294 57             LD D,A
9295 BA             CP D
9296 20A9           JR NZ,9241
9298 AF             XOR A
9299 0608           LD B,08
929B 5F             LD E,A
929C BB             CP E
929D 20A2           JR NZ,9241
929F 3C             INC A
92A0 5F             LD E,A
92A1 BB             CP E
92A2 209D           JR NZ,9241
92A4 CB27           SLA A
92A6 10F8           DJNZ,92A0
92A8 3EFF           LD A,FF
92AA 5F             LD E,A
92AB BB             CP E
92AC 2093           JR NZ,9241
92AE AF             XOR A
92AF 0608           LD B,08
92B1 67             LD H,A
92B2 BC             CP H
92B3 208C           JR NZ,9241
92B5 3C             INC A
92B6 67             LD H,A
92B7 BC             CP H
92B8 2087           JR NZ,9241
92BA CB27           SLA A
92BC 10F8           DJNZ,92B6
92BE 3EFF           LD A,FF
92C0 67             LD H,A
92C1 BC             CP H
92C2 C24112         JP NZ,1241
92C5 AF             XOR A
92C6 0608           LD B,08
92C8 6F             LD L,A
92C9 BD             CP L
92CA C24112         JP NZ,1241
92CD 3C             INC A
92CE 6F             LD L,A
92CF BD             CP L
92D0 C24112         JP NZ,1241
92D3 CB27           SLA A
92D5 10F7           DJNZ,92CE
92D7 3EFF           LD A,FF
92D9 6F             LD L,A
92DA BD             CP L
92DB C24112         JP NZ,1241
92DE 010000         LD BC,0000
92E1 C5             PUSH BC
92E2 F1             POP AF
92E3 CD3A13         CALL 133A
92E6 0C             INC C
92E7 C5             PUSH BC
92E8 F1             POP AF
92E9 D24112         JP NC,1241
92EC CD4513         CALL 1345
92EF CB21           SLA C
92F1 C5             PUSH BC
92F2 F1             POP AF
92F3 CD3A13         CALL 133A
92F6 CB21           SLA C
92F8 C5             PUSH BC
92F9 F1             POP AF
92FA E24112         JP PO,1241
92FD CD4E13         CALL 134E
9300 CB21           SLA C
9302 C5             PUSH BC
9303 F1             POP AF
9304 CD3A13         CALL 133A
9307 CB21           SLA C
9309 C5             PUSH BC
930A F1             POP AF
930B CD3A13         CALL 133A
930E CB21           SLA C
9310 C5             PUSH BC
9311 F1             POP AF
9312 CD3A13         CALL 133A
9315 CB21           SLA C
9317 C5             PUSH BC
9318 F1             POP AF
9319 C24112         JP NZ,1241
931C CD5513         CALL 1355
```

```
92DA DD
92DB C24112         JP NZ,1241
92DE 010000         LD BC,0000
92E1 C5             PUSH BC
92E2 F1             POP AF
92E3 CD3A13         CALL 133A
92E6 0C             INC C
92E7 C5             PUSH BC
92E8 F1             POP AF
92E9 D24112         JP NC,1241
92EC CD4513         CALL 1345
92EF CB21           SLA C
92F1 C5             PUSH BC
92F2 F1             POP AF
92F3 CD3A13         CALL 133A
92F6 CB21           SLA C
92F8 C5             PUSH BC
92F9 F1             POP AF
92FA E24112         JP PO,1241
92FD CD4E13         CALL 134E
9300 CB21           SLA C
9302 C5             PUSH BC
9303 F1             POP AF
9304 CD3A13         CALL 133A
9307 CB21           SLA C
9309 C5             PUSH BC
930A F1             POP AF
930B CD3A13         CALL 133A
930E CB21           SLA C
9310 C5             PUSH BC
9311 F1             POP AF
9312 CD3A13         CALL 133A
9315 CB21           SLA C
9317 C5             PUSH BC
9318 F1             POP AF
9319 C24112         JP NZ,1241
931C CD5613         CALL 1356
931F CB21           SLA C
9321 C5             PUSH BC
9322 F1             POP AF
9323 F24112         JP P,1241
9326 CD5F13         CALL 135F
9329 0EFF           LD C,FF
932B C5             PUSH BC
932C F1             POP AF
932D D24112         JP NC,1241
9330 E24112         JP PO,1241
9333 C24112         JP NZ,1241
9336 F24112         JP P,1241
9339 C9             RET
933A 382B           JR C,9367
933C EA6713         JP PE,1367
933F 2826           JR Z,9367
9341 FA6713         JP M,1367
9344 C9             RET
9345 EA6713         JP PE,1367
9348 281D           JR Z,9367
934A FA6713         JP M,1367
934D C9             RET
934E 3817           JR C,9367
9350 2815           JR Z,9367
9352 FA6713         JP M,1367
9355 C9             RET
9356 380F           JR C,9367
9358 EA6713         JP PE,1367
935B FA6713         JP M,1367
935E C9             RET
935F 3806           JR C,9367
9361 EA7813         JP PE,1378
9364 2801           JR Z,9367
9366 C9             RET
9367 C1             POP BC
9368 C34112         JP 1241
```

TIMEX/SINCLAIR 2068

DIAGNOSTICS CARTRIDGE

© 1985 By: Carl A. Mauer

VERSION ART 1.0 - Nov 10, 1985

TECHNICAL MANUAL

VERSION 0.0 - Nov 11, 1985

PRELIMINARY MANUAL

99E2
9C51

B86E
BBFC

Text in DC-2068 VERSION ART 1.0

TITLE SCREEN:

'DC. 2068 · Diagnostics · Cartridge (29)
©.1985 By: · CARL A. MILES (23)
Please · Select · Test To Be Used: (29)

1% Home RAM Test
2% CPU Test
3% SCLD Test
4% Home ROM Test
5% Extension ROM Test
6% Cassette Test
7% Keyboard Test
8% Test All Functions

Length = 1BA
Address = B86E
(386E)

Start B85C
End 6A16
To B86E

Note: The following tests use (28)
the Home RAM for testing:
SCLD Test,
Home ROM Test, and the
Extension ROM Test.
The Home RAM Test MUST have
PASSED for the RAM dependent
tests to function.
Version ART 1.0 - Nov 9, 1985', 20h ← spare for two digit date

---

'Press Any Key To Continue...',ØD,ØD

Length = 1E
Address = 9577
(1577)

'Finished',ØD,ØD

Length = ØA
Address = 9595
(1595)

~~'FAILED'~~
12,Ø1,'FAILED',ØD,ØD

Address = 9595
(1595)

Length = ~~##~~ ØC
~~Address = 95FF~~
~~(15FF)~~

ØØ 0E BB 6B - new
6Ø ØE CB 4B - OLD
↑ ↑ ↑ ↑
B C H L
RAM Test

See old Ram Tester Text sheet

(3AØ8)
Start 685C Address = BAØ8
End 68CE Length = 72
To BAØ8

SCLD Test

(3A9C)
Start = 685C Address = BA9C
End = 68B5 Length = 59
To = BA9C

~~SCLD Test New~~
~~SCLD Test~~

3A9C → 16, ØØ, ØØ, 'SCLD Test In Progress'
3AB4 → 16, ØØ, Ød, 'Finished' 2Ø, 2Ø, 2Ø, Ød, Ød
BAC4 → 12, Ø1, 'SCLD Test PASSED'; 12, ØØ, Ød, Ød
3ADA → 'FAILED'; 12, ØØ, Ød, Ød, 'Replace Chip U3', Ød, Ød →
3AEØ 3AFS
3ADØ

CPU Test

End = 68AA Address = (3AF5) BAF5
To = BAF5 Length = 4F

3AF5 → 16, ØØ, ØØ, 'CPU Test In Progress'
3BØC → 16, ØØ; Ød, 'Finished', 2Ø, 2Ø, 2Ø, Ød, Ød → 3B27
3B1C → 12, Ø1, 'CPU Test PASSED', 12, ØØ, Ød, Ød
~~CPU Test~~
3B31 → "Replace Chip U19', Ød, Ød →
3B43

Home ROM Test End = 68B4
To = BB43
Length =

3B43 → 16, ØØ, ØØ, 'Home ROM Test In Progress' → 3B7F
3B5F → 16, ØØ, Øe, 'Finished', 20, 20, 20, Ød, Ø6
3B6F → 12, Ø1, 'Home ROM ~~PASSED~~ Test PASSED', 12, Ø1, Ød, Ød
3B89 → Replace Chip U16', Ød, Ød →
3B9B

Start=685C
End=68BE
To=BB9B
Len=62

EXROM TEST

3B9B → 16,00,00,'Extension Rom Test In Progress'
3BBC → 16,00,13,'Finished',00,20,20,00,00 → 3BE1
3BCC → 12,01,'Extension Rom Test PASSED',12,00,00,00
3BEB → Replace Chip U20',00,00 → BBFD (3BFD)

CASSETTE TEST (19E2)
99E2

End=698D / To=~~BBED~~ / Len=131 / Start=685C

19E2 → 16,00,00,'This Is The Cassette Test. It',0d
→ 'Will Save A Block Of Memory Five'
→ 'Times. Press Any Key To Start',0d
→ 'Test...'
1A48 → 16,00,00,'This Test Will Now Verify Five',0d
→ 'Times. Set Up Tape For Verifing;',0d
→ 'And Press Any Key To Start',0d
→ 'Verifing...'
1AAE → 16,00,00,'Cassette Test Now Complete.',0d,0d
1ACE → 12,01,'Cassette Test PASSED',12,00,0d0d
1AEB → 12,01,'Cassette Test FAILED',12,00,0d,0d
1B02 → (Tape Header):03,'Testing...',00,04,00,10,00,00 →

1B13

Keyboard Test

1B13 → 16,00,00 'This Is The Keyboard Test.'0d
→ 'It will Test All The Keys'0d
→ 'Including Shifted Function Keys.'
→ ~~'Start With The 'I' Key And Go',0d~~
→ ~~'From Left To Right. Do The Same',0dh~~
→ ~~'For All Rows With The Space Bar',0dh~~
→ ~~'Being The Last Key Pressed.',0dh~~
→ 'Consult Manual For The Order The'
→ ~~'Keys Should Be Pressed.',0dh~~
→ 'Keys Should Be Pressed and how',0dh
→ 'To Use This Test Correctly.',0d
→ 'Testing...'

~~<16,00,00,'Keyboard Test PASSED'~~

1BDØ →16,ØØ,ØØ,12,Ø1,'Keyboard Test PASSED',12,ØØ,ØD,ØD

~~<16,00,00,12,01,'Key~~

1BED →16,ØØ,ØØ,12,Ø1,'Keyboard Test FAILED',12,ØØ,Ød,Ød

→'Check the Keyboard Itself',Ød

→'Diodes CR6 thru CR13 and U3',Ød

-'The SCLD Chip.',Ød,Ød

IC52

End=699B / Len= 13F / Des=9B13 / Start=685C

```
0000      FF        ;Not Used
0001      01        ;LROS Present Flag
0002      13        ;LSB OF START ADDRESS
0003      00        ;MSB OF START ADDRESS
0004      FC        ;CHUNK ACTIVE BYTE (0-1 ACTIVE)
0005      FF        ;NOT USED
0006      FF        ;NOT USED
0007      FF        ;NOT USED
0008    JP          ;TAPE FAIL ERROR CALL
000B      FF        ;NOT USED
000C      FF        ;NOT USED
000D      FF        ;NOT USED
000E      FF        ;NOT USED
000F      FF        ;NOT USED
0010    JP 15F2     ;RST 10H ROM CALL (PRINT A)
0013      DI        ;Boot UP: Disable Interrupts
0014    LD HL,(rmtp)  ;Get RAMTOP
0017    LD (HL), 3E   ;set it to '3E'
0019      DEC HL      ;leave next byte '0' ;top of stack
001A    LD SP,HL      ;set Stack Pointer
001B    LD HL,5CB6    ;Spectrum Chans Area
001E    LD (chan), HL ;Reset Chans Variable
0021    LD DE, 15AF   ;Source address of Chan Table
0024    JR 002B       ;jump over RST 28H
0026      FF        ;Not Used
0027      FF        ;Not Used
0028    JP 335B     ;RST 28H ROM CALL (CALCULATOR)
002B    LD BC,0015    ;length of Chan table
002E    EX DE,HL      ;correct registers
002F    LDIR          ;copy table into RAM
0031    LD HL,15C6    ;source address for strm table
0034    JR 003A       ;jump over RST 38H (INT)
0036      FF        ;Not Used
0037      FF        ;Not Used
```

```
0038    EI          ;Reenable Interupts
0039    RET         ;and Return from Interrupt
003A    LD DE,5C10  ;Destination address for Strm table
003D    LD BC,000E  ;length of strm table (in Rom)
0040    LDIR        ;copy table into RAM
0042    LD HL,memb  ;get memory bottom
0045    LD (mem-),HL ;and inialize the calculator stack
```

CARTRIDGE HOT-Z NOTES

1) AFTER EXITING HOT-Z, USE RAND USR 24Ø98 TO REENTER

2) LABELS:
   SET FLAG AT SCTZ TO ØØ for CARTRIDGE LABELS
   " " " " " Ø8 " RAM LABELS
   OR COPY CARTRIDGE LABELS TO RAM USING 'RND'.
   SOURCE BANK = ØØ ; DESTINATION BANK = FF
   START (DEST): CCAC ; END: EØØØ OR DFFF

3) 'RND' COMMAND (IN WRITE MODE)

   ASKS FOR SOURCE BAND / DESTINATION BANK
   AND WHERE THE DESTINATION OF THE TRANSFERED
   DATA IS TO GO.

   BANKS: ØØ (CARTRIDGE)
   FF (RAM (HOME BANK))
   FE (EXROM BANK)

4) TO TAKE HOT-Z OUT OF SYSTEM CONFIGURATION TABLE,
   ZERO OUT ALL CARTRIDGE BYTES IN SYSCON TABLE.
   SYSCON TABLE STARTS AT 5EEA. ØØ OUT ADDRESSES
   5EEA-5EF5. THIS WILL MAKE HOME RAM ALL YOURS.

5) EXROM LABELS:
   SET ALNA TO: (IN WRITE MODE WITH 'E' COMMAND)
   2C-DC ~ FE-DF AND TURN LABELS ON.
   TO SET BACK AGAIN, OO 5FD2 (ALNA) AND WRITE
   AC-CC-2A-DC

MAIN Entry: ~~[illegible]~~

```
D1B7 3E03          LD A,03
D1B9 CD4524        CALL 2445
D1BC 3A8D5C        LD A,(atrp)
D1BF 0F            RRCA
D1C0 0F            RRCA
D1C1 0F            RRCA
D1C2 E6F8          AND F8
D1C4 C605          ADD A,05
D1C6 07            RLCA
D1C7 07            RLCA
D1C8 07            RLCA
D1C9 328D5C        LD (atrp),A
D1CC 3EF8          LD A,F8
D1CE FDA653        AND (atrp)
D1D1 328D5C        LD (atrp),A
D1D4 01D701        LD BC,01D7
D1D7 11E0D1        LD DE,D1E0
D1DA CDB7D3        CALL D3B7
D1DD C3D0D3        JP D3D0
```

vstti

D1E0	16		22	53728	
D1E1	00		0	53729	
D1E2	00		0	53730	
D1E3	54		84	53731	T
D1E4	2F		47	53732	/
D1E5	53		83	53733	S
D1E6	20		32	53734	
D1E7	32		50	53735	2
D1E8	30		48	53736	0
D1E9	36		54	53737	6
D1EA	38		56	53738	8
D1EB	20		32	53739	
D1EC	44		68	53740	D
D1ED	69		105	53741	i
D1EE	61		97	53742	a
D1EF	67		103	53743	g
D1F0	6E		110	53744	n
D1F1	6F		111	53745	o
D1F2	73		115	53746	s
D1F3	74		116	53747	t
D1F4	69		105	53748	i
D1F5	63		99	53749	c
D1F6	73		115	53750	s
D1F7	20		32	53751	
D1F8	43		67	53752	C
D1F9	61		97	53753	a
D1FA	72	GOMO	114	53754	r
D1FB	74		116	53755	t
D1FC	72		114	53756	r
D1FD	69		105	53757	i
D1FE	64		100	53758	d
D1FF	67		103	53759	g
D200	65		101	53760	e
D201	0D		13	53761	
D202	7F	alog	127	53762	
D203	31		49	53763	1
D204	39		57	53764	9
D205	38		56	53765	8
D206	35		53	53766	5
D207	20		32	53767	
D208	42		66	53768	B
D209	79		121	53769	y
D20A	3A		58	53770	:
D20B	20		32	53771	
D20C	43		67	53772	C
D20D	61		97	53773	a
D20E	72	LD81	114	53774	r
D20F	6C		108	53775	l
D210	20		32	53776	
D211	41		65	53777	A
D212	2E		46	53778	.
D213	20		32	53779	
D214	4D		77	53780	M
D215	69		105	53781	i
D216	6C		108	53782	l
D217	65		101	53783	e
D218	73		115	53784	s
D219	2D		45	53785	-
D21A	56		86	53786	V
D21B	65		101	53787	e
D21C	72		114	53788	r
D21D	20		32	53789	
D21E	41		65	53790	A
D21F	72	GOMO	114	53791	r
D220	74		116	53792	t
D221	0D		13	53793	
D222	50		80	53794	P
D223	6C		108	53795	l
D224	65		101	53796	e
D225	61		97	53797	a
D226	73		115	53798	s
D227	65		101	53799	e
D228	20		32	53800	
D229	73		115	53801	s
D22A	65		101	53802	e
D22B	6C		108	53803	l
D22C	65		101	53804	e
D22D	63		99	53805	c
D22E	74		116	53806	t
D22F	20		32	53807	
D230	74		116	53808	t
D231	65		101	53809	e
D232	73		115	53810	s
D233	74		116	53811	t

```
D220  74          116  53792  t
D221  0D           13  53793
D222  50           80  53794  P
D223  6C          108  53795  l
D224  65          101  53796  e
D225  61           97  53797  a
D226  73          115  53798  s
D227  65          101  53799  e
D228  20           32  53800
D229  73          115  53801  s
D22A  65          101  53802  e
D22B  6C          108  53803  l
D22C  65          101  53804  e
D22D  63           99  53805  c
D22E  74          116  53806  t
D22F  20           32  53807
D230  74          116  53808  t
D231  65          101  53809  e
D232  73          115  53810  s
D233  74          116  53811  t
D234  20           32  53812
D235  74          116  53813  t
D236  6F          111  53814  o
D237  20           32  53815
D238  62           98  53816  b
D239  65          101  53817  e
D23A  20           32  53818
D23B  75          117  53819  u
D23C  73          115  53820  s
D23D  65          101  53821  e
D23E  64          100  53822  d
D23F  2E           46  53823  .
D240  2E           46  53824  .
D241  2E           46  53825  .
D242  0D    slug    13  53826
D243  0D    dexp    13  53827
D244  31           49  53828  1
D245  7D          125  53829
D246  20           32  53830
D247  52           82  53831  R
D248  41           65  53832  A
D249  4D           77  53833  M
D24A  20           32  53834
D24B  54           84  53835  T
D24C  65          101  53836  e
D24D  73          115  53837  s
D24E  74          116  53838  t
D24F  0D           13  53839
D250  32           50  53840  2
D251  7D          125  53841
D252  20           32  53842
D253  48           72  53843  H
D254  6F          111  53844  o
D255  6D          109  53845  m
D256  65          101  53846  e
D257  20           32  53847
D258  52           82  53848  R
D259  4F           79  53849  O
D25A  4D           77  53850  M
D25B  20           32  53851
D25C  54           84  53852  T
D25D  65          101  53853  e
D25E  73          115  53854  s
D25F  74          116  53855  t
D260  0D           13  53856
D261  33           51  53857  3
D262  7D          125  53858
D263  20           32  53859
D264  45           69  53860  E
D265  58           88  53861  X
D266  52           82  53862  R
D267  4F           79  53863  O
D268  4D           77  53864  M
D269  20           32  53865
D26A  54           84  53866  T
D26B  65          101  53867  e
D26C  73          115  53868  s
D26D  74          116  53869  t
D26E  0D           13  53870
D26F  34           52  53871  4
D270  7D          125  53872
D271  20           32  53873
D272  54           84  53874  T
D273  56           86  53875  V
D274  2C           44  53876  ,
D275  20           32  53877
D276  4D    ATH2   77  53878  M
D277  6F          111  53879  o
D278  6E          110  53880  n
```

```
D26F  34            52  53871  4
D270  7D           125  53872
D271  20            32  53873
D272  54            84  53874  T
D273  56            86  53875  V
D274  2C            44  53876  ,
D275  20            32  53877
D276  4D   ATH2      77  53878  M
D277  6F            111 53879  o
D278  6E            110 53880  n
D279  69            105 53881  i
D27A  74            116 53882  t
D27B  6F            111 53883  o
D27C  72            114 53884  r
D27D  20            32  53885
D27E  26            38  53886  &
D27F  20            32  53887
D280  52            82  53888  R
D281  47            71  53889  G
D282  42            66  53890  B
D283  20            32  53891
D284  54            84  53892  T
D285  65            101 53893  e
D286  73            115 53894  s
D287  74            116 53895  t
D288  0D            13  53896
D289  35            53  53897  5
D28A  7D           125  53898
D28B  20            32  53899
D28C  53            83  53900  S
D28D  6F   MAT?     111 53901  o
D28E  75            117 53902  u
D28F  6E            110 53903  n
D290  64            100 53904  d
D291  20            32  53905
D292  26            38  53906  &
D293  20            32  53907
D294  42            66  53908  B
D295  65            101 53909  e
D296  65            101 53910  e
D297  70            112 53911  p
D298  20            32  53912
D299  54            84  53913  T
D29A  65            101 53914  e
D29B  73            115 53915  s
D29C  74            116 53916  t
D29D  0D            13  53917
D29E  36            54  53918  6
D29F  7D           125  53919
D2A0  20            32  53920
D2A1  43            67  53921  C
D2A2  61            97  53922  a
D2A3  73            115 53923  s
D2A4  73            115 53924  s
D2A5  65            101 53925  e
D2A6  74            116 53926  t
D2A7  74            116 53927  t
D2A8  65            101 53928  e
D2A9  20            32  53929
D2AA  54            84  53930  T
D2AB  65            101 53931  e
D2AC  73            115 53932  s
D2AD  74            116 53933  t
D2AE  0D            13  53934
D2AF  37            55  53935  7
D2B0  7D           125  53936
D2B1  20            32  53937
D2B2  4B            75  53938  K
D2B3  65            101 53939  e
D2B4  79            121 53940  y
D2B5  62            98  53941  b
D2B6  6F            111 53942  o
D2B7  61            97  53943  a
D2B8  72            114 53944  r
D2B9  64            100 53945  d
D2BA  20            32  53946
D2BB  54            84  53947  T
D2BC  65            101 53948  e
D2BD  73            115 53949  s
D2BE  74            116 53950  t
D2BF  0D            13  53951
D2C0  38            56  53952  8
D2C1  7D           125  53953
D2C2  20            32  53954
D2C3  4A            74  53955  J
D2C4  6F            111 53956  o
D2C5  79            121 53957  y
D2C6  73            115 53958  s
D2C7  74            116 53959  t
D2C8  69            105 53960  i
```

```
D2BB  54           84  53947  T
D2BC  65          101  53948  e
D2BD  73          115  53949  s
D2BE  74          116  53950  t
D2BF  0D           13  53951
D2C0  38           56  53952  8
D2C1  7D          125  53953
D2C2  20           32  53954
D2C3  4A           74  53955  J
D2C4  6F          111  53956  o
D2C5  79          121  53957  y
D2C6  73          115  53958  s
D2C7  74          116  53959  t
D2C8  69          105  53960  i
D2C9  63           99  53961  c
D2CA  6B          107  53962  k
D2CB  20           32  53963
D2CC  54           84  53964  T
D2CD  65          101  53965  e
D2CE  73          115  53966  s
D2CF  74          116  53967  t
D2D0  0D           13  53968
D2D1  39           57  53969  9
D2D2  7D          125  53970
D2D3  20           32  53971
D2D4  50    RELO   80  53972  P
D2D5  72          114  53973  r
D2D6  69          105  53974  i
D2D7  6E          110  53975  n
D2D8  74          116  53976  t
D2D9  65          101  53977  e
D2DA  72          114  53978  r
D2DB  20           32  53979
D2DC  54           84  53980  T
D2DD  65          101  53981  e
D2DE  73          115  53982  s
D2DF  74          116  53983  t
D2E0  0D           13  53984
D2E1  30           48  53985  0
D2E2  7D          125  53986
D2E3  20           32  53987
D2E4  43           67  53988  C
D2E5  50           80  53989  P
D2E6  55           85  53990  U
D2E7  20           32  53991
D2E8  26           38  53992  &
D2E9  20           32  53993
D2EA  53           83  53994  S
D2EB  43           67  53995  C
D2EC  4C           76  53996  L
D2ED  44           68  53997  D
D2EE  20           32  53998
D2EF  54           84  53999  T
D2F0  65          101  54000  e
D2F1  73          115  54001  s
D2F2  74          116  54002  t
D2F3  0D           13  54003
D2F4  45           69  54004  E
D2F5  4E           78  54005  N
D2F6  54           84  54006  T
D2F7  45           69  54007  E
D2F8  52           82  54008  R
D2F9  7D          125  54009
D2FA  20           32  54010
D2FB  54           84  54011  T
D2FC  65          101  54012  e
D2FD  73          115  54013  s
D2FE  74          116  54014  t
D2FF  20           32  54015
D300  41           65  54016  A
D301  6C          108  54017  l
D302  6C          108  54018  l
D303  20           32  54019
D304  46    FIAG   70  54020  F
D305  75          117  54021  u
D306  6E          110  54022  n
D307  63           99  54023  c
D308  74          116  54024  t
D309  69    NESC  105  54025  i
D30A  6F          111  54026  o
D30B  6E          110  54027  n
D30C  73          115  54028  s
D30D  0D    slug   13  54029
D30E  0D           13  54030
D30F  4E           78  54031  N
D310  6F          111  54032  o
D311  74          116  54033  t
D312  65          101  54034  e
D313  3A           58  54035  :
D314  20           32  54036
```

```
D30E  0D            13  54030
D30F  4E            78  54031  N
D310  6F           111  54032  o
D311  74           116  54033  t
D312  65           101  54034  e
D313  3A            58  54035  :
D314  20            32  54036
D315  41            65  54037  A
D316  4C            76  54038  L
D317  57            87  54039  W
D318  41            65  54040  A
D319  59            89  54041  Y
D31A  53            83  54042  S
D31B  20            32  54043
D31C  74           116  54044  t
D31D  65           101  54045  e
D31E  73           115  54046  s
D31F  74           116  54047  t
D320  20            32  54048
D321  74           116  54049  t
D322  68           104  54050  h
D323  65           101  54051  e
D324  20            32  54052
D325  52            82  54053  R
D326  41            65  54054  A
D327  4D            77  54055  M
D328  20            32  54056
D329  66           102  54057  f
D32A  69           105  54058  i
D32B  72   CASO     114  54059  r
D32C  73           115  54060  s
D32D  74           116  54061  t
D32E  0D            13  54062
D32F  61            97  54063  a
D330  73           115  54064  s
D331  20            32  54065
D332  74           116  54066  t
D333  68           104  54067  h
D334  69           105  54068  i
D335  73           115  54069  s
D336  20            32  54070
D337  63            99  54071  c
D338  61            97  54072  a
D339  72   GOMO     114  54073  r
D33A  74           116  54074  t
D33B  72           114  54075  r
D33C  69           105  54076  i
D33D  64           100  54077  d
D33E  67           103  54078  g
D33F  65           101  54079  e
D340  20            32  54080
D341  75           117  54081  u
D342  73           115  54082  s
D343  65           101  54083  e
D344  73           115  54084  s
D345  20            32  54085
D346  74           116  54086  t
D347  68           104  54087  h
D348  65           101  54088  e
D349  20            32  54089
D34A  52            82  54090  R
D34B  41            65  54091  A
D34C  4D            77  54092  M
D34D  0D            13  54093
D34E  66           102  54094  f
D34F  6F           111  54095  o
D350  72           114  54096  r
D351  20            32  54097
D352  73           115  54098  s
D353  6F           111  54099  o
D354  6D           109  54100  m
D355  65           101  54101  e
D356  20            32  54102
D357  6F           111  54103  o
D358  66           102  54104  f
D359  20            32  54105
D35A  69           105  54106  i
D35B  74           116  54107  t
D35C  73           115  54108  s
D35D  20            32  54109
D35E  74           116  54110  t
D35F  65           101  54111  e
D360  73           115  54112  s
D361  74           116  54113  t
D362  73           115  54114  s
D363  20            32  54115
D364  61            97  54116  a
D365  6E           110  54117  n
D366  64           100  54118  d
D367  20            32  54119
```

```
D360  73            115  54112  s
D361  74            116  54113  t
D362  73            115  54114  s
D363  20             32  54115
D364  61             97  54116  a
D365  6E            110  54117  n
D366  64            100  54118  d
D367  20             32  54119
D368  74            116  54120  t
D369  68            104  54121  h
D36A  65            101  54122  e
D36B  0D             13  54123
D36C  52             82  54124  R
D36D  41             65  54125  A
D36E  4D             77  54126  M
D36F  20             32  54127
D370  6D            109  54128  m
D371  75            117  54129  u
D372  73            115  54130  s
D373  74            116  54131  t
D374  20             32  54132
D375  62             98  54133  b
D376  65            101  54134  e
D377  20             32  54135
D378  47             71  54136  G
D379  4F             79  54137  O
D37A  4F             79  54138  O
D37B  44             68  54139  D
D37C  20             32  54140
D37D  66            102  54141  f
D37E  6F            111  54142  o
D37F  72            114  54143  r
D380  20             32  54144
D381  74            116  54145  t
D382  68            104  54146  h
D383  6F            111  54147  o
D384  73            115  54148  s
D385  65            101  54149  e
D386  20             32  54150
D387  74            116  54151  t
D388  65            101  54152  e
D389  73            115  54153  s
D38A  74            116  54154  t
D38B  73            115  54155  s
D38C  0D             13  54156
D38D  74            116  54157  t
D38E  6F            111  54158  o
D38F  20             32  54159
D390  72            114  54160  r
D391  75            117  54161  u
D392  6E            110  54162  n
D393  20             32  54163
D394  63             99  54164  c
D395  6F            111  54165  o
D396  72            114  54166  r
D397  72   GBAN       114  54167  r
D398  65            101  54168  e
D399  63             99  54169  c
D39A  74            116  54170  t
D39B  6C            108  54171  l
D39C  79            121  54172  y
D39D  2E             46  54173  .
D39E  0D             13  54174
D39F  56             86  54175  V
D3A0  65            101  54176  e
D3A1  72   CASO       114  54177  r
D3A2  73            115  54178  s
D3A3  69   NESC      105  54179  i
D3A4  6F            111  54180  o
D3A5  6E            110  54181  n
D3A6  20             32  54182
D3A7  41             65  54183  A
D3A8  72   GOMO      114  54184  r
D3A9  74            116  54185  t
D3AA  2D             45  54186  -
D3AB  4A             74  54187  J
D3AC  75            117  54188  u
D3AD  6C            108  54189  l
D3AE  79            121  54190  y
D3AF  20             32  54191
D3B0  32             50  54192  2
D3B1  33             51  54193  3
D3B2  2C             44  54194  ,
D3B3  31             49  54195  1
D3B4  39             57  54196  9
D3B5  38             56  54197  8
D3B6  35             53  54198  5
```

```
D37A 4F                 79  54169  y
D37B 44                 68  54139  D
D37C 20                 32  54140
D37D 66                102  54141  f
D37E 6F                111  54142  o
D37F 72                114  54143  r
D380 20                 32  54144
D381 74                116  54145  t
D382 68                104  54146  h
D383 6F                111  54147  o
D384 73                115  54148  s
D385 65                101  54149  e
D386 20                 32  54150
D387 74                116  54151  t
D388 65                101  54152  e
D389 73                115  54153  s
D38A 74                116  54154  t
D38B 73                115  54155  s
D38C 0D                 13  54156
D38D 74                116  54157  t
D38E 6F                111  54158  o
D38F 20                 32  54159
D390 72                114  54160  r
D391 75                117  54161  u
D392 6E                110  54162  n
D393 20                 32  54163
D394 63                 99  54164  c
D395 6F                111  54165  o
D396 72                114  54166  r
D397 72   GBAN         114  54167  r
D398 65                101  54168  e
D399 63                 99  54169  c
D39A 74                116  54170  t
D39B 6C                108  54171  l
D39C 79                121  54172  y
D39D 2E                 46  54173  .
D39E 0D                 13  54174
D39F 56                 86  54175  V
D3A0 65                101  54176  e
D3A1 72   CASO         114  54177  r
D3A2 73                115  54178  s
D3A3 69   NESC         105  54179  i
D3A4 6F                111  54180  o
D3A5 6E                110  54181  n
D3A6 20                 32  54182
D3A7 41                 65  54183  A
D3A8 72   GOMO         114  54184  r
D3A9 74                116  54185  t
D3AA 2D                 45  54186  -
D3AB 4A                 74  54187  J
D3AC 75                117  54188  u
D3AD 6C                108  54189  l
D3AE 79                121  54190  y
D3AF 20                 32  54191
D3B0 32                 50  54192  2
D3B1 33                 51  54193  3
D3B2 2C                 44  54194  ,
D3B3 31                 49  54195  1
D3B4 39                 57  54196  9
D3B5 38                 56  54197  8
D3B6 35                 53  54198  5
```

By: Carl Moles
Version 1.0
July 23, 1985

Main Menu

Entry:

Nothing

Exit:

Starts Main Program

Source Code: Entry (RAM: D1B7) (EPROM:)

```
MAIN
MENU (D1B7) LD A,03          ; A MAGENTA BORDER
            CALL 2445        ; Do It
            LD A,(5C8D) (atrp) ; Fetch ATTR Permanent
            RRCA             ; Move bits
            RRCA             ; 5-3 to bits
            RRCA             ; 2-0
            AND F8           ; Discard old color
            ADD A,05         ; Enter new color
            RLCA             ; Return the
            RLCA             ; shifted bytes back
            RLCA             ; to their normal positions
            LD (5C8D),A (atrp) ; Effect the color
            LD A,F8          ; Prepare to mask ink color
            AND (5C8D) (atrp) ; Fetch bits 7-3 of ATTR Permanent
            LD (5C8D) (atrp) ; Color is BLACK-Effect the color
            LD BC,0107       ; BC = length of title screen string
            LD DE,D1E0       ; DE=address of beginning of string
            CALL D3B7 (STRING) ; Print Title screen
            JP D3D0 (KEYBOARD) ; AND JUMP TO SCAN KEYBOARD
```

Kebd Entry: ~~[illegible]~~

By: Carl Mices
Version 1.0
July 23, 1985

```
D3D0 01FEF7    LD BC,F7FE
D3D3 ED78      IN A,(C)
D3D5 FE1E      CP 1E
D3D7 CACFD3    JP Z,D3CF
D3DA FE1D      CP 1D
D3DC CAAFD4    JP Z,D4AF
D3DF FE1B      CP 1B
D3E1 CACFD3    JP Z,D3CF
D3E4 FE17      CP 17
D3E6 CACFD3    JP Z,D3CF
D3E9 FE0F      CP 0F
D3EB CACFD3    JP Z,D3CF
D3EE 01FEEF    LD BC,EFFE
D3F1 ED78      IN A,(C)
D3F3 FE0F      CP 0F
D3F5 CACFD3    JP Z,D3CF
D3F8 FE17      CP 17
D3FA CACFD3    JP Z,D3CF
D3FD FE1B      CP 1B
D3FF CACFD3    JP Z,D3CF
D402 FE1D      CP 1D
D404 CACFD3    JP Z,D3CF
D407 FE1E      CP 1E
D409 CACFD3    JP Z,D3CF
D40C 01FEBF    LD BC,BFFE
D40F ED78      IN A,(C)
D411 FE1E      CP 1E
D413 CACFD3    JP Z,D3CF
D416 18B8      JR ~~D3D0~~ ~~[illegible]~~
D418 00        NOP
```

TINE

BE SELECTED OR JUST A LOOP
TINE IS SELECTED

0 RAM) (EPROM)

```
KEYBOARD (D3D0) LD BC,F7FE          ; Prepare to scan keys 1-5
                IN A,(C)            ; Fetch key status
                CP 1E               ; IS '1' PRESSED?
                JP Z,               ; YES, JUMP TO RAM TEST
                CP 1D               ; NO, IS '2' PRESSED?
                JP Z,D4AF (Home Rom Test) ; YES, JUMP TO Home Rom TEST
                CP 1B               ; NO, IS '3' PRESSED?
                JP Z,               ; YES, JUMP TO EXROM TEST
                CP 17               ; NO, IS '4' PRESSED?
                JP Z,               ; YES, JUMP TO TV TEST
                CP 0F               ; NO, IS '5' PRESSED?
                JP Z,               ; YES, JUMP TO SOUND/BEEP TEST
                LD BC,EFFE          ; PREPARE TO SCAN KEYS 6-0
                IN A,(C)            ; FETCH KEY STATUS
                CP 0F               ; IS '6' PRESSED?
                JP Z,               ; YES, JUMP TO CASSETTE TEST
                CP 17               ; NO, IS '7' PRESSED?
                JP Z,               ; YES, JUMP TO KEYBOARD TEST
                CP 1B               ; NO, IS '8' PRESSED?
                JP Z,               ; YES, JUMP TO JOYSTICK TEST
                CP 1D               ; NO, IS '9' PRESSED?
                JP Z,               ; YES, JUMP TO PRINTER TEST
                CP 1E               ; NO, IS '0' PRESSED?
                JP Z,               ; YES, JUMP TO CPU/SCLD TEST
```

By: Carl Meces
Version 1.0
July 23, 1985

KEYBOARD SELECTION ROUTINE

ENTRY

NOTHING

EXIT

A SUBROUTINE WILL BE SELECTED OR JUST A LOOP UNTIL A SUBROUTINE IS SELECTED

SOURCE CODE: ENTRY (030Φ RAM) (EPROM)

```
KEYBOARD (030Φ) LD BC,F7FE      ;Prepare to scan keys 1-5
                IN A,(C)        ;Fetch key status
                CP 1E           ;Is '1' pressed?
                JP Z,           ;Yes, Jump to RAM test
                CP 1D           ;No, Is '2' pressed?
                JP Z,D4AF (Home Rom Test) ;Yes, Jump to Home Rom Test
                CP 1B           ;No, Is '3' pressed?
                JP Z,           ;Yes, Jump to Exrom Test
                CP 17           ;No, Is '4' pressed?
                JP Z,           ;Yes, Jump to TV test
                CP ØF           ;No, Is '5' pressed?
                JP Z,           ;Yes, Jump to Sound/Beep Test
                LD BC,EFFE      ;Prepare to scan keys 6-Φ
                IN A,(C)        ;Fetch key status
                CP ØF           ;Is '6' pressed?
                JP Z,           ;Yes, Jump to Cassette Test
                CP 17           ;No, Is '7' pressed?
                JP Z,           ;Yes, Jump to keyboard Test
                CP 1B           ;No, Is '8' pressed?
                JP Z,           ;Yes, Jump to Joystick Test
                CP 1D           ;No, Is '9' pressed?
                JP Z,           ;Yes, Jump to Printer Test
                CP 1E           ;No, Is 'Φ' pressed?
                JP Z,           ;Yes, Jump to CPU/SCLD Test
```

```
        LD BC, BFFE          ; PREPARE TO SCAN KEY 'ENTER'
        IN A,(C)             ; FETCH 'ENTER' KEY STATUS
        CP 1E                ; IS 'ENTER' PRESSED?
        JP Z,                ; YES - JUMP TO ALL FUNCTIONS TEST
        JR D30Ø (KEYBOARD)   ; NO - RESCAN ALL KEYS AGAIN
FLAG (D41B) NOP              ; Ø = MAIN MENU SELECTION
                             ; 1 = ALL FUNCTIONS TEST SELECTION
                             ; Dertermines when subroutine
                             ; finishes if it will return to
                             ; Main Menu or go on to the
                             ; next test in daisy chain.
```

By: Carl Miles
Version 1.0
July 23, 1985

```
D3B7 C5          PUSH BC
D3B8 D5          PUSH DE
D3B9 3E02        LD A,02
D3BB CD3012      CALL chop
D3BE CDA608      CALL cls_
D3C1 1802        JR D3C5
D3C3 C5          PUSH BC
D3C4 D5          PUSH DE
D3C5 3E02        LD A,02
D3C7 CD3012      CALL chop
D3CA D1          POP DE
D3CB C1          POP BC
D3CC CDDB21      CALL prn$
D3CF C9          RET
```

stri — Entry ~~[illegible]~~ — str1 — excp

~~[illegible]~~

...NES

AT STRING: BC = LENGTH OF STRING
DE = START ADDRESS OF STRING
THE SCREEN WILL BE CLEARED

AT STRING2: SAME AS "STRING" EXCEPT SCREEN WILL NOT BE CLEARED

EXIT:

THE STRING WILL BE PRINTED

SOURCE CODE: ENTRY (RAM: D3B7) (EPROM:)

```
STRING (D3B7) PUSH BC          ; Save length
              PUSH DE          ; Save start address
              LD A,02          ; Prepare to open 'screen' channel
              CALL 1230 (chop) ; Open screen
              CALL 08A6 (cls_) ; Now clear entire screen
              JR D3C5 (EXCP)   ; Jump to EXCP - No need to save twice!
STRING2 (D3C3) PUSH BC         ; Save length
              PUSH DE          ; Save start address
EXCP (D3C5)   LD A,02          ; Prepare to open 'screen' channel
              CALL 1230 (chop) ; Open screen
              POP DE           ; Get start address of string
              POP BC           ; Get length of string
              CALL 21DB (prn$) ; Print string on screen
              RET              ; and Return - Finished
```

By: Carl Miles
Version 1.0
July 23, 1985

String Printing Routines

Entry

At string: BC = length of string
DE = start address of string
The screen will be cleared

At string2: same as "string" except screen will NOT be cleared

Exit:

The string will be printed

Source code: Entry (RAM: D3B7) (EPROM:)

```
STRING (D3B7)  PUSH BC          ; Save length
               PUSH DE          ; Save start address
               LD A,02          ; Prepare to open 'screen' channel
               CALL 1630 (chop) ; Open screen
               CALL 08A6 (cls_) ; Now clear entire screen
               JR D3C5  (EXCP)  ; Jump to EXCP - No need to save twice!
STRING2 (D3C3) PUSH BC          ; Save length
               PUSH DE          ; Save start address
EXCP (D3C5)    LD A,02          ; Prepare to open 'screen' channel
               CALL 1630 (chop) ; Open screen
               POP DE           ; Get start address of string
               POP BC           ; Get length of string
               CALL 210B (prn$) ; Print string on screen
               RET              ; and Return - Finished
```

D66C	16	— BA28	22	54892	
D66D	00	(3A28)	0	54893	
D66E	00		0	54894	
D66F	48		72	54895	H
D670	6F		111	54896	o
D671	6D		109	54897	m
D672	65		101	54898	e
D673	20		32	54899	
D674	52		82	54900	R
D675	41		65	54901	A
D676	4D		77	54902	M
D677	20		32	54903	
D678	54		84	54904	T
D679	65		101	54905	e
D67A	73		115	54906	s
D67B	74		116	54907	t
D67C	20		32	54908	
D67D	49		73	54909	I
D67E	6E		110	54910	n
D67F	20		32	54911	
D680	50	RELO	80	54912	P
D681	72		114	54913	r
D682	6F		111	54914	o
D683	67		103	54915	g
D684	72	GBAN	114	54916	r
D685	65		101	54917	e
D686	73		115	54918	s
D687	73		115	54919	s
D688	16	— BA44	22	54920	
D689	00		0	54921	
D68A	0E	(3A44)	14	54922	
D68B	46		70	54923	F
D68C	69		105	54924	i
D68D	6E		110	54925	n
D68E	69		105	54926	i
D68F	73		115	54927	s
D690	68		104	54928	h
D691	65		101	54929	e
D692	64		100	54930	d
D693	20		32	54931	
D694	20		32	54932	
D695	20		32	54933	
D696	0D	slug	13	54934	
D697	0D		13	54935	
D698	43	— BA54	67	54936	C
D699	68		104	54937	h
D69A	65		101	54938	e
D69B	63	(3A54)	99	54939	c
D69C	6B		107	54940	k
D69D	20		32	54941	
D69E	43		67	54942	C
D69F	68		104	54943	h
D6A0	69		105	54944	i
D6A1	70		112	54945	p
D6A2	73		115	54946	s
D6A3	20		32	54947	
D6A4	12	— BA6Ø	18	54948	
D6A5	01		1	54949	
D6A6	48	(3A6Ø)	72	54950	H
D6A7	6F		111	54951	o
D6A8	6D		109	54952	m
D6A9	65		101	54953	e
D6AA	20		32	54954	
D6AB	52		82	54955	R
D6AC	41		65	54956	A
D6AD	4D		77	54957	M
D6AE	20		32	54958	
D6AF	26		38	54959	&
D6B0	20		32	54960	
D6B1	52		82	54961	R
D6B2	41		65	54962	A
D6B3	4D		77	54963	M
D6B4	20		32	54964	
D6B5	53		83	54965	S
D6B6	75		117	54966	u
D6B7	70		112	54967	p
D6B8	70	SPPO	112	54968	p
D6B9	6F		111	54969	o
D6BA	72	GOMO	114	54970	r
D6BB	74		116	54971	t
D6BC	20		32	54972	
D6BD	43		67	54973	C
D6BE	68		104	54974	h
D6BF	69		105	54975	i
D6C0	70		112	54976	p

D6A4	12	BA6Ø	18	54948	
D6A5	01		1	54949	
D6A6	48	(3A6Ø)	72	54950	H
D6A7	6F		111	54951	o
D6A8	6D		109	54952	m
D6A9	65		101	54953	e
D6AA	20		32	54954	
D6AB	52		82	54955	R
D6AC	41		65	54956	A
D6AD	4D		77	54957	M
D6AE	20		32	54958	
D6AF	26		38	54959	&
D6B0	20		32	54960	
D6B1	52		82	54961	R
D6B2	41		65	54962	A
D6B3	4D		77	54963	M
D6B4	20		32	54964	
D6B5	53		83	54965	S
D6B6	75		117	54966	u
D6B7	70		112	54967	p
D6B8	70	SPPO	112	54968	p
D6B9	6F		111	54969	o
D6BA	72	GOMO	114	54970	r
D6BB	74		116	54971	t
D6BC	20		32	54972	
D6BD	43		67	54973	C
D6BE	68		104	54974	h
D6BF	69		105	54975	i
D6C0	70		112	54976	p
D6C1	73		115	54977	s
D6C2	0D		13	54978	
D6C3	50		80	54979	P
D6C4	41		65	54980	A
D6C5	53		83	54981	S
D6C6	53		83	54982	S
D6C7	45		69	54983	E
D6C8	44		68	54984	D
D6C9	12		18	54985	
D6CA	00		0	54986	
D6CB	0D	slug	13	54987	
D6CC	0D		13	54988	
D6CD	12	1595	18	54989	
D6CE	01		1	54990	
D6CF	46		70	54991	F
D6D0	41		65	54992	A
D6D1	49		73	54993	I
D6D2	4C		76	54994	L
D6D3	45		69	54995	E
D6D4	44		68	54996	D
D6D5	12		18	54997	
D6D6	00		0	54998	
D6D7	0D	slug	13	54999	
D6D8	0D		13	55000	
D6D9	2C		44	55001	,
D6DA	55	BA89	85	55002	U
D6DB	35		53	55003	5
D6DC	2C	(3A89)	44	55004	,
D6DD	55		85	55005	U
D6DE	39		57	55006	9
D6DF	2C	BA8E	44	55007	,
D6E0	55		85	55008	U
D6E1	31		49	55009	1
D6E2	30		48	55010	0
D6E3	2C		44	55011	,
D6E4	55		85	55012	U
D6E5	31		49	55013	1
D6E6	31		49	55014	1
D6E7	2C		44	55015	,
D6E8	55		85	55016	U
D6E9	33		51	55017	3
D6EA	0D	slug	13	55018	
D6EB	0D		13	55019	

```
D549 011C00          LD BC,001C
D54C 116CD6          LD DE,D66C
D54F CDB7D3          CALL D3B7
D552 010014          LD BC,1400
D555 C5              PUSH BC
D556 F3              DI
D557 110040          LD DE,4000
D55A 1A              LD A,(DE)
D55B 67              LD H,A
D55C 0600            LD B,00
D55E 78              LD A,B
D55F 12              LD (DE),A
D560 1A              LD A,(DE)
D561 B8              CP B
D562 204B            JR NZ,D5AF
D564 04              INC B
D565 20F7            JR NZ,D55E
D567 7C              LD A,H
D568 12              LD (DE),A
D569 AF              XOR A
D56A 13              INC DE
D56B 7A              LD A,D
D56C FE00            CP 00
D56E 20EA            JR NZ,D55A
D570 C1              POP BC
D571 05              DEC B
D572 20E1            JR NZ,D555
D574 012900          LD BC,0029
D577 1135D4          LD DE,D435
D57A CDC3D3          CALL D3C3
D57D 012900          LD BC,0029
D580 11A4D6          LD DE,D6A4
D583 CDC3D3          CALL D3C3
D586 011C00          LD BC,001C
D589 1173D4          LD DE,D473
D58C CDC3D3          CALL D3C3
D58F 3E02            LD A,02
D591 CDE630          CALL stka
D594 3E1E            LD A,1E
D596 CDE630          CALL stka
D599 CD3604          CALL beep
D59C CDB002          CALL kbsc
D59F 1C              INC E
D5A0 AF              XOR A
D5A1 BB              CP E
D5A2 28F8            JR Z,D59C
D5A4 3A18D4          LD A,(D418)
D5A7 FE00            CP 00
D5A9 C2AFD4          JP NZ,D4AF
D5AC C3B7D1          JP D1B7
D5AF 7C              LD A,H
D5B0 12              LD (DE),A
D5B1 7A              LD A,D
D5B2 07              RLCA
D5B3 3805            JR C,D5BA
D5B5 3E01            LD A,01
D5B7 67              LD H,A
D5B8 180A            JR D5C4
D5BA 07              RLCA
D5BB 3805            JR C,D5C2
D5BD 3E02            LD A,02
D5BF 67              LD H,A
D5C0 1802            JR D5C4
D5C2 2600            LD H,00
D5C4 78              LD A,B
D5C5 07              RLCA
D5C6 380D            JR C,D5D5
D5C8 07              RLCA
D5C9 380A            JR C,D5D5
D5CB 07              RLCA
D5CC 3807            JR C,D5D5
D5CE 07              RLCA
D5CF 3804            JR C,D5D5
D5D1 7C              LD A,H
D5D2 C603            ADD A,03
D5D4 67              LD H,A
D5D5 E5              PUSH HL
D5D6 011C00          LD BC,001C
D5D9 1188D6          LD DE,D688
D5DC CDC3D3          CALL D3C3
D5DF E1              POP HL
D5E0 7C              LD A,H
D5E1 FE00            CP 00
D5E3 200B            JR NZ,D5F0
D5E5 3E55            LD A,55
                     RST 10H
                     LD A,31
```

```
D5CE 07          RLCA
D5CF 3804        JR C,D5D5
D5D1 7C          LD A,H
D5D2 C603        ADD A,03
D5D4 67          LD H,A
D5D5 E5          PUSH HL
D5D6 011C00      LD BC,001C
D5D9 1188D6      LD DE,D688
D5DC CDC3D3      CALL D3C3
D5DF E1          POP HL
D5E0 7C          LD A,H
D5E1 FE00        CP 00
D5E3 200B        JR NZ,D5F0
D5E5 3E55        LD A,55
D5E7 D7          RST 10H
D5E8 3E31        LD A,31
D5EA D7          RST 10H
D5EB 3E38        LD A,38
D5ED D7          RST 10H
D5EE 183F        JR D62F
D5F0 FE01        CP 01
D5F2 2008        JR NZ,D5FC
D5F4 3E55        LD A,55
D5F6 D7          RST 10H
D5F7 3E37        LD A,37
D5F9 D7          RST 10H
D5FA 185C        JR D658
D5FC FE02        CP 02
D5FE 200B        JR NZ,D60B
D600 3E55        LD A,55
D602 D7          RST 10H
D603 3E31        LD A,31
D605 D7          RST 10H
D606 3E33        LD A,33
D608 D7          RST 10H
D609 1824        JR D62F
D60B FE03        CP 03
D60D 200B        JR NZ,D61A
D60F 3E55        LD A,55
D611 D7          RST 10H
D612 3E31        LD A,31
D614 D7          RST 10H
D615 3E37        LD A,37
D617 D7          RST 10H
D618 1815        JR D62F
D61A FE04        CP 04
D61C 2008        JR NZ,D626
D61E 3E55        LD A,55
D620 D7          RST 10H
D621 3E36        LD A,36
D623 D7          RST 10H
D624 1832        JR D658
D626 3E55        LD A,55
D628 D7          RST 10H
D629 3E31        LD A,31
D62B D7          RST 10H
D62C 3E32        LD A,32
D62E D7          RST 10H
D62F 010D00      LD BC,000D
D632 11DFD6      LD DE,D6DF
D635 CDC3D3      CALL D3C3
D638 1827        JR D661
D63A 011E00      LD BC,001E
D63D 11A4D6      LD DE,D6A4
D640 CDC3D3      CALL D3C3
D643 010D00      LD BC,000D
D646 11CCD6      LD DE,D6CC
D649 CDC3D3      CALL D3C3
D64C 011C00      LD BC,001C
D64F 1173D4      LD DE,D473
D652 CDC3D3      CALL D3C3
D655 C399D5      JP D599
D658 011300      LD BC,0013
D65B 11D9D6      LD DE,D6D9
D65E CDC3D3      CALL D3C3
D661 3E02        LD A,02
D663 CDE630      CALL stka
D666 AF          XOR A
D667 CDE630      CALL stka
D66A 18CE        JR D63A
```

By Carl Miles
Version 1.0
August 7, 1985

Home RAM Tester

Entry:

Flag at D418 determines if all functions test
: or main menu selection

Exit

Tells you (on screen) if Home RAM is good or bad

Source Code: Entry (RAM: D549) (EPROM:)

```
RAM_ (D549)  LD BC,01C          ;beginning and length of
             LD DE,D66C         ;the title screen
             CALL 03B7 (STRI)   ;print it (with CLS)
             LD BC,1400         ;do it 20 times
STAR (D555)  PUSH BC            ;save this
             DI                 ;Disable interrupts
             LD DE,4000         ;Start test at 4000h
SAVE (D55A)  LD A,(DE)          ;Get what is in RAM
             LD H,A             ;Save it
             LD B,00            ;start count at 0
RLOP (D55E)  LD A,B             ;put into A
             LD (DE),A          ;put into RAM
             LD A,(DE)          ;get from RAM
             CP B               ;is it correct?
             JR NZ, D5AF (FAIL) ;No - goto Fail
             INC B              ;Next number
             JR NZ, D55E (RLOP) ;Is 255 passed? No - goto RLOP
ENDC (D567)  LD A,H             ;get old value
             LD (DE),A          ;put back into RAM
             XOR A              ;clean flags (not necessary!!)
             INC DE             ;Next address
             LD A,D             ;Is the address...
             CP 00              ;passed FFFF?
             JR NZ, D55A (SAVE) ;No - goto save
```

```
ENDR (D57Ø)  POP BC              ; get count
             DEC B               ; dec it
             JR NZ, D555 (STAR)  ; is it Ø? No-goto STAR
             LD BC, ØØ29         ; Yes-We passed RAM all 20 times!
             LD DE, D435         ; Print 'Finished', '20 Passes
             CALL D3C3 (STR1)    ; With Ø Errors': Print it now
             LD BC, ØØ29         ; Print 'Home RAM & RAM support
             LD DE, D6A4         ; 'chips PASSED'
             CALL D3C3 (STR1)    ; print it now
             LD BC, ØØ1C         ; Print 'Press any key to...
             LD DE, D473         ; 'continue...'
             CALL D3C3 (STR1)    ; Print it now
             LD A, Ø2            ; Prepare to BEEP a length
             CALL 3ØE6 (STRA)    ; of 2 seconds (through strA)
             LD A, 1E            ; at all high pitch
             CALL 3ØE6 (STRA)    ; now (through strA)
WAIT (D599)  CALL Ø436 (beep)    ; BEEP 2, 3Ø now (ALSO ENABLE INT)
WAI1 (D59C)  CAL Ø2BØ (kbsc)     ; Prepare to Check if
             INC E               ; a key is pressed
             XOR A               ; clean flags
             CP E                ; is a key pressed?
             JR Z, D59C (WAI1)   ; No-Loop back
PASS (D5A4)  LD A, (D418)        ; Yes-Is Auto-flag set for
             CP ØØ               ; Menu or Automatic?
             JP NZ, D4AF (ROM_)  ; Automatic-goto ROM test
             JP D1B7 (MAIN)      ; Menu-goto main menu
FAIL (D5AF)  LD A, H             ; get old value
             LD (DE), A          ; put it into RAM
             LD A, D             ; get top of address
             RLCA                ; is address Less than 32768?
             JR C, D5BA (<--)    ; No-goto <---
             LD A, Ø1            ; Yes-Set flag (Reg H) for
             LD H, A             ; address ≥ 32768...
             JR D5C4 (NUMB)      ; and goto numb
<-- (D5BA)   RLCA                ; IS address >32767 and <49152?
             JR C, D5C2 (>---)   ; No-goto >---
             LD A, Ø2            ; Yes-Set flag (Reg H) for...
```

```
                LD H,A          ;address >32767 & <49152
                JR D5C4 (NUMB)  ;and goto numb
>...(D5C2)      LD H,00         ;Set flag to address >4915|
NUMB (D5C4)     LD A,B          ;get number in RAM
                RLCA            ;check to...
                JR C,D5D5 (DONT);see if the...
New Ver 2.0     RLCA            ;number is...
in pencil       JR C,D5D5 (DONT);greater than...
                RLCA            ;15 so...
                JR C,D5D5 (DONT);a flag...
                RLCA            ;can be set...
                JR C,D5D5 (DONT);accordingly
LD A,D          LD A,H          ;get flag
LD E,D          ADD A,03        ;Add 3 to it to update flag
LD D,A          LD H,A          ;and put back into flag
DONT (D5D5)     PUSH HL PUSH DE ;save flag
                LD BC,0010      ;Print 'Finished---' Check
                LD DE,0688      ;'chips--'
                CALL 03C3 (STR1);Print now
POP DE          POP HL          ;retrive flag
PUSH DE         LD A,H          ;put flag into A
LD A,D          CP 00           ;is it 0?
AND A           JR NZ,D5F0 (01--);No-goto 01--
                LD A,'U'        ;U18 must...
                RST 10H         ;be at...
                LD A,'1'        ;fault. Print 'U18'...
                RST 10H         ;to screen...
                LD A,'8'        ;now and...
                RST 10H         ;Jump to...
                JR D62F (PR32)  ;PR32
01--(D5F0)      CP 01           ;is flag 01?
                JR NZ,D5FC (02--);No-goto 02--
                LD A,'U'        ;U7...
                RST 10H         ;must be bad. So print...
                LD A,'7'        ;'U7' on the...
                RST 10H         ;screen and...
                JR D658 (PR16)  ;jump to PR16
```

```
Ø2_(D5FC) CP Ø2                ; is flag is Ø2?
          JR NZ, D6ØB (Ø3__)   ; No - goto Ø3__
          LD A, 'U'            ; U13...
          RST 1ØH              ; must be...
          LD A, '1'            ; bad,...
          RST 1ØH              ; so print...
          LD A, '3'            ; 'U13'...
          RST 1ØH              ; to screen and...
          JR D62F (PR32)       ; jump to PR32
Ø3__(D6ØB) CP Ø3                ; is flag Ø3?
          JR NZ, D61A (Ø4__)   ; No - jump to Ø4__
          LD A, 'U'            ; U17...
          RST 1ØH              ; must be...
          LD A, '1'            ; bad,...
          RST 1ØH              ; so print...
          LD A, '7'            ; 'U17'...
          RST 1ØH              ; to screen and...
          JR D62F (PR32)       ; Jump to PR32
Ø4__(D61A) CP Ø4                ; is flag Ø4?
          JR NZ, D626 (Ø5__)   ; No - jump to Ø5__
          LD A, 'U'            ; U6 must be...
          RST 1ØH              ; bad, so print...
          LD A, '6'            ; 'U6'...
          RST 1ØH              ; to screen and...
          JR D658 (PR16)       ; jump to PR16
Ø5__(D626) LD A, 'U'            ; flag must be 5
          RST 1ØH              ; so U12...
          LD A, '1'            ; must be...
          RST 1ØH              ; bad,...
          LD A, '2'            ; so print...
          RST 1ØH              ; 'U12'... to screen and...
PR32(D62F) LD BC, ØØØD          ; Print the Upper 32K...
          LD DE, D6DF          ; of bad chips...
          CALL D3C3 (STR1)     ; now...
          JR D661 (BEE_)       ; and finish through BEE_
SHOR(D63A) LD BC, ØØ1E          ; Print 'Home RAM & RAM support
          LD DE, D6A4          ; chips'
```

```
                CALL D3C3 (STR2)        ; now....
                LD BC, 0000             ; Print 'FAILED'...
                LD DE, D6CC             ; in FLASH....
                CALL D3C3 (STR2)        ; now....
                LD BC, 001C             ; Print 'Press any key...
                LD DE, D473             ; 'to Continue....'
                CALL D3C3 (STR2)        ; now...
                JP D599 (WAIT)          ; and end through WAIT
PRIG (D658)     LD BC, 0013             ; Print the first 16K RAM
                LD DE, D6D9             ; chips as bad and do it....
                CALL D3C3 (STR2)        ; now!!...
BEEP (D661)     LD A, 02                ; also set up a BEEP for 2
                CALL 30E6 (stka)        ; seconds (through stka)
                XOR A                   ; at a pitch of 0
                CALL 30E6 (stka)        ; through stka
                JR D63A (SHOR)          ; and beep and finish through SHOR
```

Home RAM Test Ver 2.0

Source Code: ØØF2

```
        LD BC,          ; length of string
        LD DE,          ; address of string
        CALL stri       ; CLS and print string
        DI              ; Disable interrupts
        EXX             ; exchange registers
        LD D,ØB         ; do test 10 times
        EXX             ; store in alternate registers
start:(Ø1ØØ) LD HL,4ØØØ ; start test at 4ØØØh
rept: (Ø1Ø3) LD A,(HL)  ; get RAM contents
        LD D,A          ; save contents for future use
        XOR A           ; prepare to put a Ø...
        LD E,A          ; into RAM. set flag first
        LD (HL),A       ; effect RAM
        NOP             ; effect a refresh
        NOP             ; with six NOP's
        NOP             ; ...
        NOP             ; ...
        NOP             ; ...
        NOP             ; ...
        LD A,(HL)       ; get RAM contents
        AND A           ; is it Ø?
        JR NZ,Ø168      ; no-failed, jump to fail routine
        INC A           ; update 'A'
        LD B,Ø8         ; prepare to loop 8 times
loop:(Ø115) LD C,A      ; save 'A' for future use
        LD E,A          ; set flag now
        LD (HL),A       ; effect RAM
        NOP             ; effect a refresh
        NOP             ; with six NOP's
        NOP             ; ...
        NOP             ; ...
        NOP             ; ...
        NOP             ; ...
```

```
LD A,(HL)       ; get RAM contents
CP C            ; is it correct?
JR NZ,Ø168      ; No - failed, goto fail routine
SLA A           ; shift byte left one place
DJNZ,Ø115       ; loop again until done all bits
LD A,FF         ; prepare to set all bits
LD E,A          ; set flag
LD (HL),A       ; effect RAM
NOP             ; effect a refresh
NOP             ; with six NOP's
NOP             ; ...
NOP             ; ...
NOP             ; ...
NOP             ; ...
LD A,(HL)       ; get RAM contents
CP FF           ; is it FF?
JR NZ,Ø168      ; no - failed, goto fail routine
~~INC HL~~
LD A,D          ; get old contents
LD (HL),A       ; restore RAM
INC HL          ; next address...
```

Test #1

Home RAM Test Ver. 2.0.

```
                LD BC, length
                LD DE, address
                Call Stri
                DI
                LD B,ØB
star:(ØØFE)     LD HL, 4ØØØ
rept:(Ø14Ø)     LD A, (HL)
                LD D, A
                XOR A
LD E,A          LD (HL), A
                NOP (8 times)
                LD A, (HL)
LD B,Ø8         AND A
                JR NZ, fail
                INC A
loop:           LD C, A
(Ø115)          LD (HL), A
                NOP (8 times)
LD E,A          LD A, (HL)
                CP C
                JR NZ, fail
                SLA A
                DJNZ, loop:
                LD A, FF
                LD (HL), A
                NOP (8 times)
                LD A, (HL)
LD E,A          CP FF
                JR NZ, fail
Ø137 ->         INC HL
                LD A, H
                AND A
                JR NZ, rept
                DEC D
                JR NZ, star
```

```
; CLS & Print title string
;disable interrupts
;loop 10 times
; start test at 4000h
;set old RAM contents
;save it
;clear A
;clear RAM
; 8 NOP's, Effect Refresh
;set RAM
;is it Ø?
;no-fails->
;yes-inc A (A=1)
;store A in C for future use
;effect RAM
;allow for refresh
;get ram
;is it correct?
;no-fails->
;yes-shift bit over one
;do it 8 times
;A=FF
;set ram
;Allow for refresh
;set RAM
;is it OK?
;no-fails->
;yes-next address
;set address top
;is it Ø?
;no-test again
;yes-test complete; dec counter
;redo test again
```

We passed all 10 times

```
LD BC, length                 } ~~Passed~~ 'Finished'
LD DE, address                } '10 passes with Ø errors'
Call Str1                     ; print string
LD BC, length
LD DE, address
CALL Str1                     ; 'Home RAM & RAM Support Chips PASSED
~~LD BC, length~~
~~LD DE, address~~
~~CALL Str1~~
CALL cont                     ; 'Press any key to continue...'
LD A, Ø1
LD (5CB1),A
RAM PASS flag
CALL Beep                     ; High pitch BEEP (Also enable Int)
out:
CALL Wait                     ; wait for key press
CALL Auto                     ; is Auto Advance Set?
JP NZ, next test              ; yes - goto next test
JP Main Menu                  ; No - goto Main Menu
Fail
XOR A
LD (5CB1),A
LD A,D                        ; set old value
LD (HL),A                     ; restore RAM
PUSH HL                       ; save address
Ram Fail flag
Reserved

LD A,H                        ; get top address
RLCA                          ; is address less than 32768?
JR C,<---                     ; no - jump ahead
~~LD H,Ø1~~                   ~~; set flag~~
LD D,Ø1                       ; set flag for address <32768...
JR Numb                       ; and goto numb
<---
RLCA                          ; is address >32767 and <49152?
JR C,>---                     ; no - jump ahead
LD D,Ø2                       ; set flag (>32767 and <49152)
JR Numb                       ; and jump ahead
>---
LD D,ØØ                       ; set flag for >49151
Numb
LD A,E                        ; set old number
```

See old RAM Tester: ...

cont...

```
Bee-  Call Bee1          ;low tone pitch
      JR shor             ;finish through shor

Shor  POP HL              ;restore address
      LD A,D              ;set flag
      POP AF              ;retrieve flag
      LD D,A              ;restore to address only
      LD A,E              ;set only address flag
      AND A               ;is address >49152?
      JR Z,fini           ;yes-end test
      CP 01               ;no-is it 32768?
      JR NZ,no1-          ;no-jump ahead
      LD HL,8000h         ;yes-adjust address
doit  DI                  ;disable interrupts again
      JR rept             ;and start test again
no1-  LD HL,0000h         ;address must be between 8000-BFFF
      JR doit             ;and return through doit.

fini  LD BC,length        ;'Home RAM & RAM support chips'
      LD DE,address
      Call Str1
      LD BC,length        ;'FAILED'
      LD DE,address       ;'Press any key to continue...'
      CALL Str1           ;and finish through out
      CALL cont
      JR out

LD BC,length
LD DE,address
CALL Str1
'Finished'
```

ON BACK

```
Beep:   LD A,02
        CALL 30E6 (2D28)
        LD A,1E
Beep2:  CALL 30E6
Beep:   CALL 0436
        RET
Beep1:  LD A,02
        CALL 30E6
        XOR A
        [redacted]
        JR Beep2
Wait    LD B,3C
dely    HALT
        DJNZ, dely
Wait1   CALL 02B0
        INC E
        XOR A
        CP E
        JR Z,Wait1
        RET
Auto    LD A,(5CB1)        ;set Auto flag
        AND A              ;set flags (zero)
        RET
Cont    LD BC, length
        LD DE, address
        CALL str1          ;'Press any key to continue...'
        RET
```

Ram Flag = 5CBI = 0 if RAM failed or Test not Run
= 1 if RAM Ok!

HOME RAM TEST VER 2.0 - OCT 21, 1985

SOURCE CODE: 00F2

```
ram_:(00F2) LD BC,
            LD DE,
            CALL stri (00A4)
            DI
            EXX
            LD D, 0B
            EXX
star: (0100) LD HL, 4000h
rept: (0103) LD A, (HL)
            LD D, A
            XOR A
            LD E, A
            LD (HL), A
            NOP
            NOP
            NOP
            NOP
            NOP
            NOP
            LD A, (HL)
            AND A
            JR NZ, fail (016A)
            INC A
            LD B, 08
loop: (0115) LD C, A
            LD E, A
            LD (HL), A
            NOP
            NOP
            NOP
            NOP
            NOP
            NOP
```

```
LD A,(HL)
CP C
JR NZ, fail (Ø16A)
SLA A
DJNZ, loop (Ø115)
LD A, FFh
LD E,A
LD (HL), A
NOP
NOP
NOP
NOP
NOP
NOP
LD A, (HL)
CP FFh
JR NZ, fail (Ø16A)
LD A,D
LD (HL),A
INC HL
LD A,H
AND A
JR NZ, rept (Ø103)
EXX
DEC D
EXX
JR NZ, star (Ø1ØØ)
LD BC,
LD DE,
CALL str1 (ØØBØ)
LD BC,
LD DE,
CALL str1 (ØØBØ)
CALL cont (ØØE8)
LD A, Ø1
LD (5CB1), A
CALL beep (ØØBD)
```

```
out_: (015E)  CALL wait (00D3)
              CALL auto (00E3)
              JP NZ, cpu_ (0248)
              JP menu (0048)
fail: (016A)  XOR A
              LD (5CBI), A
              LD A,D
              LD (HL), A
              PUSH HL
              LD A,H
              RLCA
              JR C, <--- (0179)
              LD D, 01
              JR numb (0182)
<---: (0179)  RLCA
              JR C, >--- (0180)
              LD D,02
              JR numb (0182)
>---: (0180)  LD D, 00
numb: (0182)  LD A,E
              RLCA
              JR C, dont (0194)
              RLCA
              JR C, dont (0194)
              RLCA
              JR C, dont (0194)
              RLCA
              JR C, dont (0194)
              LD A,D
              LD E,D
              ADD A, 03
              LD D,A
dont: (0194)  PUSH DE
              LD BC,
              LD DE,
              CALL str1 (00B0)
              POP DE
```

```
                PUSH DE
                LD A,D
                AND A
                JR NZ, Ø1-- (Ø1AF)
                LD A, 'U'
                RST 1ØH
                LD A, 'I'
                RST 1ØH
                LD A, '8'
                RST 1ØH
                JR pr32 (Ø1EE)
Ø1--: (Ø1AF)    CP Ø1
                JR NZ, Ø2-- (Ø1BB)
                LD A, 'U'
                RST 1ØH
                LD A, '7'
                RST 1ØH
                JR pr16 (Ø23Ø) (~~ØBBF~~)
Ø2--: (Ø1BB)    CP Ø2
                JR NZ, Ø3-- (Ø1CA)
                LD A, 'U'
                RST 1ØH
                LD A, '1'
                RST 1ØH
                LD A, '3'
                RST 1ØH
                JR pr32 (Ø1EE)
Ø3--: (Ø1CA)    CP Ø3
                JR NZ, Ø4-- (Ø109)
                LD A, 'U'
                RST 1ØH
                LD A, 'I'
                RST 1ØH
                LD A, '7'
                RST 1ØH
                JR pr32 (Ø1EE)
Ø4--: (Ø109)    CP Ø4
```

```
                JR NZ, Ø5-- (Ø1E5)
                LD A, 'U'
                RST 10H
                LD A, '6'
                RST 10H
                JR pr16 (Ø230)
Ø5--: (Ø1E5)    LD A, 'U'
                RST 10H
                LD A, 'I'
                RST 10H
                LD A, '2'
                RST 10H
pr32: (Ø1EE)    LD BC,
                LD DE,
                CALL str1 (ØØBØ)
                JR bee_ (Ø231)
shor: (Ø1F9)    POP DE
                POP HL
                LD A, E
                AND A
                JR Z, fini (Ø2ØF)
                CP Ø1
                JR NZ, no1_ (Ø2ØA)
                LD HL, 8ØØØh
doit: (Ø2Ø6)    DI
                JR rept (Ø193)
no1_: (Ø2ØA)    LD HL, CØØØh
                JR doit (Ø2Ø6)
fini: (Ø2ØF)    LD BC,
                LD DE,
                CALL str1 (ØØBØ)
                LD BC,
                LD DE,
                CALL str1 (ØØBØ)
                LD BC,
                LD DE,
                CALL str1 (ØØBØ)
```

```
        CALL cont (ØØE3)
        JR outm (Ø15E)
prlb: (~~Ø1DE~~)  LD BC,
      (Ø23Ø)      LD DE,
                  CALL str1 (ØØBØ)
bee_: (~~Ø23E~~)  CALL bee1 (ØØCB)
      (Ø239)      JR shor (Ø1F9)

                  db ' / /85-', FFh
```

Above is the release date followed by a dash followed by version ID number - FFh . FFh = Version ART

CPU TEST

Registers:

A ✓
Bc ✓
DE ✓
HL ✓
BC' ✓
DE' ✓
HL' ✓
A' ✓
FLAGS ✓
FLAGS' ✓
IX ✓
IY ✓
SP ✓
PC – Cannot Test (But is self-testing)
I ✓
R – Cannot Test (But is self-testing)

START

FOR ALL REGS, Put a ϕ, then a 1, 2, 4, 8, 16, 32, 64, 128 and 255 in it

If Reg accepts all values, then it passed, if not, it failed

FLAGS:

FLAGS	7 S	6 Z	5 – ↑ NOT USED	4 H ↑ CANNOT BE TESTED	3 – ↑ NOT USED	2 P/V	1 N ↑ CANNOT BE TESTED	0 C

ϕϕ = Positive, NZ, PO, NC
01 = " , " , " , (C)
ϕ2 = Same as ϕϕ
04 = Positive, NZ, (PE), NC
ϕ8 = Same as ϕϕ
16 = Same as ϕϕ
32 = Same as ϕϕ
64 = Positive, (Z), PO, NC
128 = (Minus), NZ, PO, NC
255 = (Minus), (Z), (PE), (C)

Print Title Screen

```
LD BC, 0000
LD DE, 0000
CALL D3B7
DI →  CALL Tester1        (A-L and Flags)
      LD A, I
      DEC A
      LD I, A
      EX AF, AF'
      EXX
      CALL Tester1        (A'-L' and Flags')
      EXX
      EX AF, AF'
      LD A, I
      INC A
      LD I, A
      LD IX, 0000         ;clear IX
      PUSH IX             }Put into BC
      POP BC              }
      XOR A               ;Clear A
      CP B                ;is it 0
      JR NZ, fail         ;No - fail
      CP C                ;yes - is this also 0
      JR NZ, fail         ;no - fail
      INC C               ;inc C = 1 now
IXlo → PUSH BC            }put into IX
      POP IX              }
      POP DE              ;put BC into DE
      PUSH IX
      POP BC
      LD A, E
      CP C
      JR NZ, fail
      LD A, D
      CP B
      JR NZ, fail
      AND A
```

Push AF
Push BC
Push DE
Push HL
Push IX
Push IY
Ex AF, AF'
EXX

PUSH AF
Push BC
Push DE
Push HL

EXX
EX AF, AF'

```
        SLA C
        JR NC, IXlo
        LD C, 00
        INC B
IXhi -> PUSH BC
        PUSH BC
        POP IX
        POP DE
        PUSH IX
        POP BC
        LD A, E
        CP C
        JR NZ, fail
        LD A, D
        CP B
        JR NZ, fail
        SLA B
        JR NC, IXhi
        LD IX, FFFF
        PUSH IX
        POP BC
        LD A, FF
        CP B
        JR NZ, fail
        CP C
        JR NZ, fail
        LD IY, 0000
        PUSH IY
        POP BC
        XOR A
```

AND A

SAME AS IX test except replace all IX to IY

~~JR NZ,fail2~~
~~LD A,D~~
~~LD I,A~~

I Test

```
LD A,I          } SAVE I Reg
LD D,A          }
XOR A
LD B,A
LD I,A          ; I can hold Ø?
LD A,I
CP B            ; is I Ø?
JR NZ,fail2     ; no - fail
~~INC B~~       ~~; B=1~~      } yes - continue
~~B~~           }
~~INC B~~       }
XOR A           ; clear Carry
INC B           ; B=1
LD A,B          ; A=1
Ilop -> LD I,A
LD A,I
CP B            ; is A (or I) equal to B?
JR NZ,fail2     ; no - fail
AND A           ; yes - clear carry
SLA B           ; B=B^2
LD A,B          ; A=B
JR NC,Ilop
LD A,FF         }
LD I,A          } can I hold FF?
LD A,I          }
CP FF           }
JR NZ,fail2     - no fail
LD A,D          } Restore I Reg
LD I,A          }
```

```
            XOR A          ; clear A
            JR NZ, fail    ; if not zero, A fails
LD B, 08    INC A          ; A = 1 now
loop ->     CP A           ; S hould Produce a '0'
            JR NZ, fail    ; if not zero, A fails
            LD B, 08
            SLA A          ; rotate bit
            DJNZ, loop     ; recheck
            LD A, FF       ; finished - A = FF
            CP FF          ; is it FF
            JR NZ, fail    ; no - fails
            XOR A          ; A Passes - Now B Clear A
loop1 ->    LD B, A        ; Put 0 into B
            CP B           ; are the same?
            JR NZ, fail    ; no, fails
            SLA A          ; rotate bit
            JR NC, loop1   ; if not finished, redo again
            LD A, FF       }
            LD B, A        } is B = FF?
            CP B           }
            JR NZ, fail    ; no failed -
LD B, 08    XOR A          ; B passes - Now C - Clear A
loop2 ->    LD C, A        ; Put 0 into C
            CP C           }
            JR NZ, fail    }
            SLA A          }
            DJNZ, loop2    } The C test
            LD A, FF       }
            LD C, A        }
            CP C           }
            JR NZ, fail    }
```

```
        XOR A
        LD B,08
lop3 -> LD D,A
        CP D
        JR NZ,fail
        SLA A
        DJNZ,lop3
        LD A,FF
        LD D,A
        CP D
        JR NZ,fail
```

D test

```
        XOR A
        LD B,08
lop4 -> LD E,A
        CP E
        JR NZ,fail
        SLA A
        DJNZ, lop4
        LD A,FF
        LD E,A
        CP E
        JR NZ,fail
```

E test

```
        XOR A
        LD B,08
lop5 -> LD H,A
        CP H
        JR NZ,fail
        SLA A
        DJNZ,lop5
        LD A,FF
        LD H,A
        CP H
        JR NZ,fail
```

H test

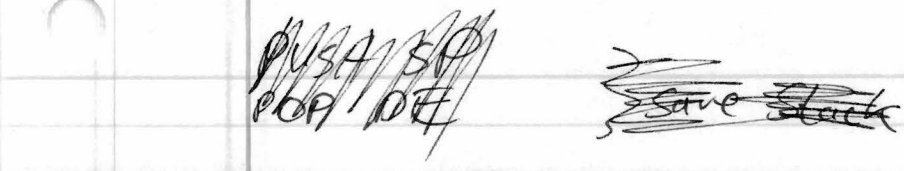
Prints "CPU Test $\boxed{\text{PASSED}}$", ØD
"Press any key for SCLD Test"

PASS:

```
LD BC,0000        ; length of string
LD DE,0000        ; address of string
CALL 0000         ; print string
LD A,Ø2           }
CALL stka         } Beep 2,3Ø
LD A,1E           }
Call stka         }
Call beek         }
Call wait         ; wait for key press
JP SCLD           ; goto SCLD test
```

DI

end



~~PUSH SP~~
~~POP DE~~ ~~Save Stack~~

LD HL,ØØØØ
ADD HL,SP } Save Stack address (in HL)
~~PUSH HL~~
EX DE,HL ; now it is in DE
LD HL,ØØØØ
LD SP,HL
~~LD HL,ØØØØ~~ → ADD HL,SP
~~SPlo~~
XOR A
CP L
JR NZ,fail1
CP H
JR NZ,fail1
SPlo → ~~INC L~~ LD BC,ØØØ1 LD H,B LD L,C ; L = 1
LD SP,HL
~~LD B,H~~
~~LD C,L~~
LD HL,ØØØØ
ADD HL,SP
LD A,H
CP B
JR NZ,fail1
LD A,L
CP C
JR NZ,fail1
AND A → SLA C
JR NC,SPlo
~~XOR C~~ LD C,ØØ
INC B
SPhi → LD H,B
LD L,C
LD SP,HL
LD HL,ØØØØ
ADD HL,SP
LD A,H
CP B

JR NZ, fail1
LD A, L
CP C
JR NZ, fail1
AND A → SLA B
JR NC, sPhi
LD HL, FFFF
LD SP, HL
~~LD HL, 0000~~ INC HL
ADD HL, SP
LD A, FF
CP H
JR NZ, fail1
CP L
JR NZ, fail1
EX DE, HL
LD SP, HL

LD A, I
LD D, A
~~XOR A~~ XOR A — LD B, A
Ilop → LD I, A
~~LD B, A~~
~~XOR B~~
LD A, I
~~XOR B~~
CP B
JR NZ, fail2
AND A
SLA B
LD A, B
JR NC, Ilop
LD A, FF
~~LD B, FF~~ LD B, A
LD I, A
LD A, I
CP B

SAVE I yes

Needs Correction

It is 0 When it gets here!! So needs rewrite to make it a 1 When it sets here!! Look at other Routines

```
CALL 0000          ;print message
LD A,02
CALL stka          } Beep 2,0
XOR A
Call stka
~~JR pass1~~        ~~;finish through end of PASS~~
CALL beep          ; beep it (enable interrupts)
CALL wait          ; wait for a key press
EX AF,AF'
EXX
POP HL
POP DE
POP BC
POP AF
EXX                  } Restore Regs
EX AF,AF'
POP IY
POP IX
POP HL
POP DE
POP BC
POP AF
JP scld            ;goto scld test
```

DI

Fail 1 Called by Stack Pointer test

```
EX DE,HL           } Restore SP
LD SP,HL
JR pass-over       -finish through Fail
```

Fail 2 Called by I test

```
LD A,D             } Restore I Reg
LD I,A
JR pass-over       ; finish through fail
```

Fail (Called By:)

A test (with 3F in I for normal, 3E for Prime)
B test (")
C " (")
D " (")
E " (")
H " (")
L " (")
Flags " (")
IX test (I = 3F)
IY test (")

Prints "CPU Test Failed", ØD
"Replace Chip U19"
"Press any key for SCLD test"

```
LD A,I          ;get flag
CP 3F           ;is it normal Register set?
JR Z,pass-over  ;yes-goto pass-over
EX AF,AF'       ;no-reset to normal set
EXX             ;...
INC A           ;A=3F
LD I,A          ;restore I
```

```
LD A,I          ; get flag
CP 3F           ; is it normal set?
JR Z,pass-over  ; yes-skip-over
EXX             ; no-restet set
EX AF,AF'       ;
INC A           ; A=3F now
LD I,A          ; Restore I
LD BC,0000      ; length of fail message
LD DE,0000      ; address of fail message
```

pass-over

```
        XOR A
        LD  B,08
lop6 -> LD  L,A
        CP  L
        JR  NZ,fail
        SLA A
        DJNZ,lop6
        LD  A,FF
        LD  L,A
        CP  L
        JR  NZ,fail
```

} Test

```
TEST:
        JR  C,fail
        JR  PE,fail
        JR  Z,fail
        JR  M,fail
        Ret

Test 4:
        JR  PE,fail
        JR  Z,fail
        JR  M,fail
        Ret
```

```
Test2
        JR  C,fail
        JR  Z,fail
        JR  M,fail
        Ret

Test 3
        JR  C,fail
        JR  PE,fail
        JR  M,fail
        RET

Test4
        JR  C,fail
        JR  PE,fail
        JR  Z,fail
        Ret
```

[redacted]

```
Flags => LD  BC,0000
         PUSH BC
         POP  AF
         [redacted] Call test      ;NC not set-fail
         INC  C
         PUSH BC
         POP  AF
         JR   NC,fail
         Call test2
         SLA
         PUSH BC
         POP  AF
         Call test
         SLA  C
         PUSH BC
         POP  AF
         JR   PO,fail
         Call test 2
```

} Reset flags

} test Carry

} Test bit 2 (no test)

} Test PE

```
SLA C
PUSH BC
POP AF
Call test
```
} Bit 3

```
SLA C
PUSH BC
POP AF
CALL test
```
} Bit 4

```
SLA C
PUSH BC
POP AF
CALL test
```
} Bit 5

```
SLA C
PUSH BC
POP AF
JR NZ, fail
Call test 3
```
} Zero flag

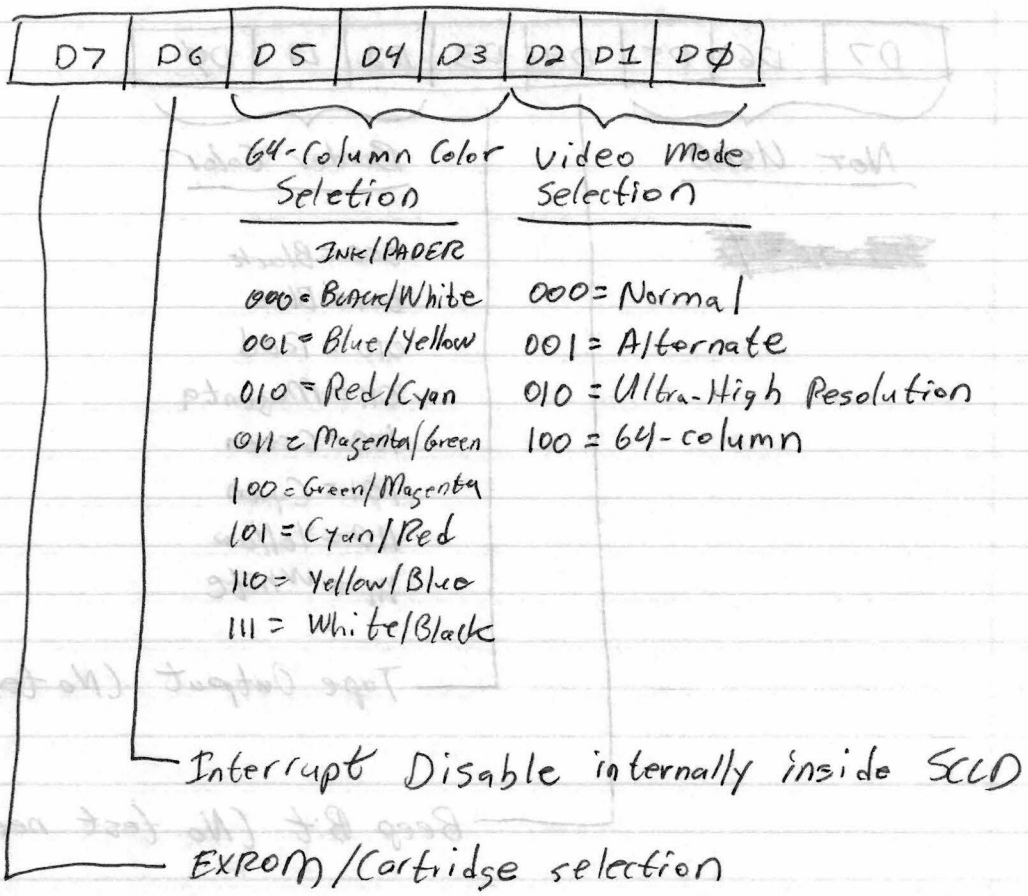
```
SLA C
PUSH BC
POP AF
JR P, fail
Call test 4
```
} Sign flag

```
LD C, AF
PUSH BC
POP AF
JR NC, fail
JR PO, fail
JR NZ, fail
JR P, fail
```
} Test FF in flags

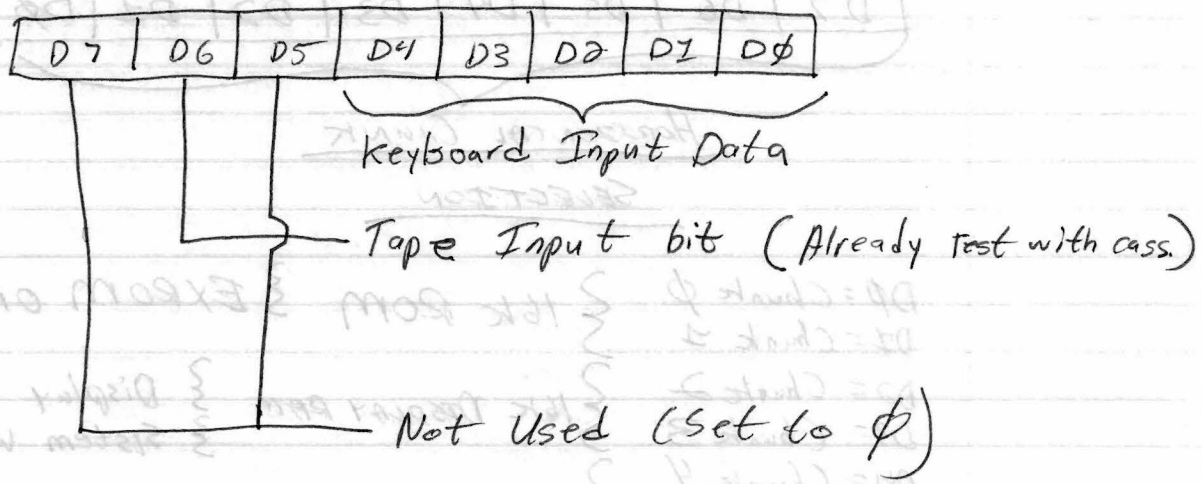
F4 Test

To test (F4), first we must Ø it. Therefore we need to copy some code into the system RAM and run from there. Then we need to make (F4) to '1', so use RAM again. For '2' also use RAM. For '4', interrupts must be disabled, do not use the IY pointer, do not use stack, use ROM for test. For '8' (chunk 3), same as with '4'. For '16' thru '128', use ROM for test. For '255', must follow '4' instructions to the letter! or system will 'hang'.

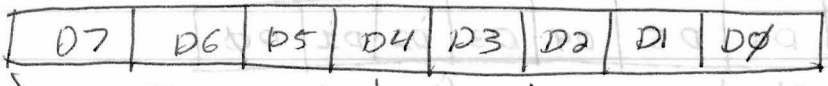
Port FF Test



PORT FE Test READ (IN)



Port FE Test WRITE (OUT)



NOT USED

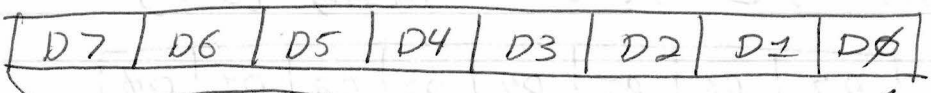
Border Color

000 = Black
001 = Blue
010 = Red
011 = Magenta
100 = Green
101 = Cyan
110 = Yellow
111 = White

Tape Output (No test needed)

Beep Bit (No test needed)

Port F4 Test



HORIZONTAL CHUNK SELECTION

DØ = Chunk Ø } 16K ROM } EXROM ONLY
D1 = Chunk 1

D2 = Chunk 2 } 16K DISPLAY RAM } Display Only
D3 = Chunk 3 } System Variables/Stack

D4 = Chunk 4
D5 = Chunk 5
D6 = Chunk 6 } 32K RAM Expansion
D7 = Chunk 7

FF test (936B)

```
        DI              ; disable interrupts
        IN A,(FF)       ; get (FF)
        LD C,A          ; save it
        XOR A           ; clear A
        LD B,08         ; set up loop
        LD D,A          ; put number in D
        OUT (FF),A      ; set port
        IN A,(FF)       ; get port
        CP D            ; are they the same?
        JR NZ,fail1     ; NO - fail
        INC A           ; YES - inc A
lop1 -> LD D,A          ; put A into D
        OUT (FF),A      ; set port
        IN A,(FF)       ; read port
        CP D            ; are they the same?
        JR NZ,fail1     ; no - fail
        SLA A           ; yes - shift bit
        DJNZ, lop1      ; and do again
        LD A,FF         ; A=FF
        LD D,A          ; store in D
        OUT (FF),A      ; set FF
        IN (FF),A       ; read FF
        CP D            ; are they the same?
        JR NZ,fail1     ; no - fail
        LD A,C          ; get old status
        OUT (FF),A      ; restore port
        IN A,(FF)       ; get FF
        LD C,A          ; store it
```

Text: See other Sheet

JR Pass (93DE)

(93A6)

Fail ~~(93AF)~~

```
LD A,C          ;get old port status
OUT (FF),A      ;reset port
JR fail         ;jump ahead to common fail
```

PASS ~~(93D7)~~ (93DE)

```
LD BC,          'Finished'
LD DE,
CALL 00B0
LD BC,          'SCLD Test PASSED'
LD DE,
CALL 00B0
CALL cont (00E8)    ;press to continue...
CALL beep (00BD)
quit -> CALL wait (00D3)
CALL auto (00E3)
JP NZ, rom
JP menu (0048)
```

Fail (9402)

```
LD BC,          'Finished'
LD DE,
CALL 00B0
LD BC,          'SCLD Test'
LD DE,
CALL 00B0
LD BC,          FAILED Replace Chip U5'
LD DE,
CALL 00B0
CALL cont (00E8)
CALL beel (00CB)
jr quit (93F6)
```

F4 Test (93A4)

```
LD A,(5CB1)  -> JP Z,0048  ;Ram failed or Not run
AND A
DI                         ;disable interrupts
IN A,(F4)                  ;set port status
EXX                        ;save it!
LD C,A                     ;... in alternate
EXX                        ;... resisters
LD BC,length               }
LD DE,8000                 } copy RAM code into RAM
LD AL,source               }
LDIR
JP (Ram-Code)              ;run it
error trap here            ;comes back  <- Return = (93B8)
LD A,04                    ;chunk 2  -> set up loop (93BF)
OUT (F4),A                 ;set it
IN A,(F4)                  ;set it
CP D                       ;are they the same?
JR NZ,fail2                ;no-fail
LD B,06                    ;yes set up loop
SLA A                      ;shift bit
DJNZ,lop2                  ;do it again
LD A,FF                    ;A=FF
LD D,A                     ;store it in D
OUT (F4),A                 ;set port
IN A,(F4)                  ;get port
CP D                       ;are they the same?
JR NZ,fail2                ;no-fail
EXX                        ;yes restore...
LD A,C                     ;the...
EXX                        ;(F4)...
OUT (F4),A                 ;port
```

Return -> error trap here

LD B,06 -> LD A,04

LD D,A -> OUT (F4),A

lop2

(93B6) (93C3)

RAM_Code

```
XOR A                      ;clear A
LD D,A                     ;stor in D
OUT (F4),A                 ;set port      over 3
```

8000 (942C)

```
        IN A,(F4)          ;set port
        CP D               ;are they the same?
        JR NZ,Ramfail      ;no-fail
        INC A              ;yes - check chunk Ø
        LD D,A             ;store in D
        OUT (F4),A         ;set port
        IN (F4),A          ;get port
        CP D               ;are they the same?
        JR NZ Ramfail      ;no-fail
        SLA A              ;shift bit (Chunk 1)
        LD D,A             ;stor in D
        OUT (F4),A         ;set port
        IN A,(F4)          ;get port
        CD D               ;are they the same ?
        JR NZ Ramfail      ;no fail
        [illegible]
        [illegible]
        [illegible]        ;E=Ø, no error
        [illegible]
short:  EXX
(9449)  LD A,C             } set old F4 status
        EXX
        OUT (F4),A         ;restore it
        JP Return          ;return to ROM
Ramfail LD E,Ø1            ;-E=1- error!!,
(9451)  [illegible] JR short ;finish through SHORT
        EXX, LD A,C, EXX, OUT (F4),A, JP fail2

Fail2   (9425)
        EXX
        LD A,C
        EXX
        OUT (F4),A
        JR 9402            (fail)

END = 9459 (1459)
```

SCLD Test Version 3.Ø 11/9/85

```
LD A, (5CB1)
AND A
JP Z,ØØ48
LD BC,
LD DE,
CALL ØØA4
LD BC
LD DE
LD HL
LDIR
JP 8ØØØ
9389 → JR NC, fail
(1389)  JP
LD B,Ø6
```

Copy (FF) and (F4) tests into RAM

-do the (FF) test only!

-do the (F4) test only!

↓ same as old test

93E9: Ram Code:
~~93EB~~: DI

fail 1
(9428)

(F4) test:
(942F)

Home ROM (12/01/85)

```
        DI
        LD BC, length
        LD DE, Destination
        LD HL, Source
        LDIR
        CALL Destination    } Block load Rom to 8000-C000
        DI
        LD BC, 0000
        LD DE, 8000
        LD HL, 0000
Retu    Push BC
(9482)  LD BC, 0000
Loop    LD A, (DE)
(9486)  LD C, A
        XOR A
        ADC HL, BC
        JR C, over
        INC DE
        LD A, D
        CP C0
        JR NZ, loop
        JR finished
Over:   POP BC
(9495)  INC BC
        INC DE
        JR Retu
finished: POP BC
(949A)  LD A, BD
        ↓
        and so on
```

RAM Res Code

```
ORG 0E000h          9C51   length=26h
                    (1C51)
DI
EXX
IN A, (F4)          } Save Bank Status
EXX
LD B, A
EXX
IN A, (FF)
RES 7, A            } Turn EXROM off!
OUT (FF), A
XOR A               } clear A
OUT (F4), A         } enable entire Home Bank
EXX                 ; normal again
LD BC, 4000         (length)
LD DE, 8000         (destination)
LD HL, 0000         (source)
LDIR                (copy Home Rom now)
EXX
LD A, B
EXX
OUT (F4), A         } restore Bank
IN A, (FF)
RES 7, A
OUT (FF), A         } enable cartridge
EXX
RET ← 9C76
      (1C76)
```

Home ROM Tester Ver 2Ø ART (9459)

```
LD A,(5CB1)
AND A
JP Z, Menu (ØØ48)
LD BC,
LD DE,                    'Title String'
CALL ØØA4
DI                        ;disable interrupts
LD BC,                    :
LD DE,8000                ;Copy code to RAM
LD HL,                    ;
LDIR
JP 8000                   ;execute checksum in RAM
(9478) -> POP BC
(1478) -> Same as Rest of ~~RAM~~ ROM routine

Fail (94A7) (14A7)
Wail (949B) (149B)
```

Ram Code:

```
~~94C7 LD BC,ØØØØ~~
~~(14C7) LD DE,ØØØØ~~
(14C7) 94C7 ~~XOR A~~ IN A,(F4)   }
EXX                               }
LD B,A                            } Save port status
EXX                               }
XOR A                             } enable Home bank
~~star: (94CB)~~ OUT (F4),A
star: (94CF) LD BC,0000
LD DE,0000
LD HL,0000
(94D8) Peta: Push BC
LD BC,ØØØØ
loop (94DC) LD A,(DE)
LD C,A
XOR A
ADC HL,BC
JR C,over
INC DE
LD A,D
```

```
        CP 40
        JR NZ, loop (94DC
        EXX                 } get old port status
        LD A,B              }
        EXX
        OUT (F4), A         } reenable Cartridge
        JP 1478             ; Put back into Cart.
over(94FA) POP BC
        INC BC
        INC DE
        JR 94D8 (reta)
```

→ end (94F6)

```
D4AF 011C00   ← home      LD BC,001C
D4B2 1119D4               LD DE,D419
D4B5 CDB7D3               CALL D3B7
D4B8 F3                   DI
D4B9 D9                   EXX
D4BA 0614                 LD B,14
D4BC D9                   EXX
D4BD 010000               LD BC,0000 ← stak
D4C0 110000               LD DE,0000
D4C3 210000               LD HL,0000
D4C6 C5                   PUSH BC ← Retk
D4C7 010000               LD BC,0000
D4CA 1A                   LD A,(DE) ← Loph
D4CB 4F                   LD C,A
D4CC AF                   XOR A
D4CD ED4A                 ADC HL,BC
D4CF 384D                 JR C,D51E
D4D1 13                   INC DE
D4D2 7A                   LD A,D
D4D3 FE40                 CP 40
D4D5 20F3                 JR NZ,D4CA
D4D7 C1                   POP BC
D4D8 3EBD                 LD A,BD
D4DA BD                   CP L
D4DB 2046                 JR NZ,D523
D4DD 3EBC                 LD A,BC
D4DF BC                   CP H
D4E0 2041                 JR NZ,D523
D4E2 3E1A                 LD A,1A
D4E4 B9                   CP C
D4E5 203C                 JR NZ,D523
D4E7 AF                   XOR A
D4E8 B8                   CP B
D4E9 2038                 JR NZ,D523
D4EB D9                   EXX
D4EC 05                   DEC B
D4ED 78                   LD A,B
D4EE D9                   EXX
D4EF FE00                 CP 00
D4F1 20CA                 JR NZ,D4BD
D4F3 015A00               LD BC,005A
D4F6 1135D4               LD DE,D435
D4F9 CDC3D3               CALL D3C3
D4FC 3E02                 LD A,02
D4FE CDE630               CALL stka
D501 3E1E                 LD A,1E
D503 CDE630               CALL stka
D506 CD3604               CALL beep ← outh
D509 CDB002               ~~CALL kbsc~~
D50C 1C                   ~~INC E~~
D50D AF                   ~~XOR A~~
D50E BB                   ~~CP E~~
D50F 2002                 ~~JR NZ,D513~~
D511 18F6                 ~~JR D509~~
D513 3A18D4               LD A,(D418)
D516 FE00                 CP 00
D518 C2CFD3               JP NZ,D3CF
D51B C3B7D1               JP D1B7
D51E C1                   POP BC ← ovek
D51F 03                   INC BC
D520 13                   INC DE
D521 18A3                 JR D4C6
D523 011000               LD BC,0010 ← tail
D526 1135D4               LD DE,D435
D529 CDC3D3               CALL D3C3
D52C 012000               LD BC,0020
D52F 118FD4               LD DE,D48F
D532 CDC3D3               CALL D3C3
D535 011E00               LD BC,001E
D538 1171D4               LD DE,D471
D53B CDC3D3               CALL D3C3
D53E 3E02                 LD A,02
D540 CDE630               CALL stka
D543 AF                   XOR A
D544 CDE630               CALL stka
D547 18BD                 JR D506
```

Call Wait

```
D419 16          22 54297
D41A 00           0 54298
D41B 00           0 54299
D41C 48          72 54300 H
D41D 6F         111 54301 o
D41E 6D         109 54302 m
D41F 65         101 54303 e
D420 20          32 54304
D421 52          82 54305 R
D422 4F          79 54306 O
D423 4D          77 54307 M
D424 20          32 54308
D425 54          84 54309 T
D426 65         101 54310 e
D427 73         115 54311 s
D428 74         116 54312 t
D429 20          32 54313
D42A 49          73 54314 I
D42B 6E         110 54315 n
D42C 20          32 54316
D42D 50   RELO    80 54317 P
D42E 72         114 54318 r
D42F 6F         111 54319 o
D430 67         103 54320 g
D431 72   GBAN   114 54321 r
D432 65         101 54322 e
D433 73         115 54323 s
D434 73         115 54324 s
D435 16          22 54325
D436 00           0 54326
D437 0E          14 54327
D438 46          70 54328 F
D439 69         105 54329 i
D43A 6E         110 54330 n
D43B 69         105 54331 i
D43C 73         115 54332 s
D43D 68         104 54333 h
D43E 65         101 54334 e
D43F 64         100 54335 d
D440 20          32 54336
D441 20          32 54337
D442 20          32 54338
D443 0D   slug    13 54339
D444 0D          13 54340
D445 32          50 54341 2
D446 30          48 54342 0
D447 20          32 54343
D448 50          80 54344 P
D449 61          97 54345 a
D44A 73         115 54346 s
D44B 73         115 54347 s
D44C 65         101 54348 e
D44D 73         115 54349 s
D44E 20          32 54350
D44F 57          87 54351 W
D450 69         105 54352 i
D451 74         116 54353 t
D452 68         104 54354 h
D453 20          32 54355
D454 30          48 54356 0
D455 20          32 54357
D456 45          69 54358 E
D457 72         114 54359 r
D458 72         114 54360 r
D459 6F         111 54361 o
D45A 72   CASO   114 54362 r
D45B 73         115 54363 s
D45C 0D   slug    13 54364
D45D 0D          13 54365
D45E 12          18 54366
D45F 01           1 54367
D460 48          72 54368 H
D461 6F         111 54369 o
D462 6D         109 54370 m
D463 65         101 54371 e
D464 20          32 54372
D465 52          82 54373 R
D466 4F          79 54374 O
D467 4D          77 54375 M
D468 20          32 54376
D469 50          80 54377 P
D46A 41          65 54378 A
D46B 53          83 54379 S
D46C 53          83 54380 S
D46D 45          69 54381 E
D46E 44          68 54382 D
```

```
D45E 12              18  54366
D45F 01               1  54367
D460 48              72  54368  H
D461 6F             111  54369  o
D462 6D             109  54370  m
D463 65             101  54371  e
D464 20              32  54372
D465 52              82  54373  R
D466 4F              79  54374  O
D467 4D              77  54375  M
D468 20              32  54376
D469 50              80  54377  P
D46A 41              65  54378  A
D46B 53              83  54379  S
D46C 53              83  54380  S
D46D 45              69  54381  E
D46E 44              68  54382  D
D46F 12              18  54383
D470 00               0  54384
D471 0D   slug      13  54385
D472 0D              13  54386
D473 50   RELO      80  54387  P
D474 72   GBAN     114  54388  r
D475 65             101  54389  e
D476 73             115  54390  s
D477 73             115  54391  s
D478 20              32  54392
D479 41              65  54393  A
D47A 6E             110  54394  n
D47B 79             121  54395  y
D47C 20              32  54396
D47D 4B              75  54397  K
D47E 65             101  54398  e
D47F 79             121  54399  y
D480 20              32  54400
D481 54              84  54401  T
D482 6F             111  54402  o
D483 20              32  54403
D484 43              67  54404  C
D485 6F             111  54405  o
D486 6E             110  54406  n
D487 74             116  54407  t
D488 69             105  54408  i
D489 6E             110  54409  n
D48A 75             117  54410  u
D48B 65             101  54411  e
D48C 2E              46  54412  .
D48D 2E              46  54413  .
D48E 2E              46  54414  .
D48F 12              18  54415
D490 01               1  54416
D491 48              72  54417  H
D492 6F             111  54418  o
D493 6D             109  54419  m
D494 65             101  54420  e
D495 20              32  54421
D496 52              82  54422  R
D497 4F              79  54423  O
D498 4D              77  54424  M
D499 20              32  54425
D49A 46              70  54426  F
D49B 41              65  54427  A
D49C 49              73  54428  I
D49D 4C              76  54429  L
D49E 45              69  54430  E
D49F 44              68  54431  D
D4A0 12              18  54432
D4A1 00               0  54433
D4A2 0D   slug      13  54434
D4A3 0D              13  54435
D4A4 52              82  54436  R
D4A5 65             101  54437  e
D4A6 70             112  54438  p
D4A7 6C             108  54439  l
D4A8 61              97  54440  a
D4A9 63              99  54441  c
D4AA 65             101  54442  e
D4AB 20              32  54443
D4AC 55              85  54444  U
D4AD 31              49  54445  1
D4AE 36              54  54446  6
```

By: Carl Meeks
Version 1.0
August 3, 1985

Home ROM Tester

Entry:

Flag at D418 determines if all functions test or main menu selection

Exit

Tells you (on screen) if Home ROM is good or bad.

Source Code: Entry (RAM: D4AF) (EPROM:)

```
(D4AF) LD BC,001C      ;BC = length of title string
       LD DE,D419      ;DE = start address of title string
       CALL 03B7 (STRING) ;Print string (and CLS)
       DI              ;Disable Interrupts
       EXX             ;Exchange to Prime Registers
       LD B,14         ;Do test 20 times
       EXX             ;Reexchange the Registers
START (D4BD) LD BC,0000 ;BC = 0000 (upper 16 bits of addition)
       LD DE,0000      ;DE = Address (0000 to start)
       LD HL,0000      ;HL = 0000 (lower 16 bits of addition)
RETU (D4C6) PUSH BC    ;Save BC as BC gets destroyed
       LD BC,0000      ;BC = 0000 (used for temp storage)
LOOP (D4CA) LD A,(DE)  ;Get contents of ROM address
       LD C,A          ;Put into C for the BC reg
       XOR A           ;Clear flags for proper addition
       ADC HL,BC       ;Add BC to HL
       JR C,D51E (OVER) ;Is HL full? Yes, Jump to Over
       INC DE          ;NO - INC ADDRESS
       LD A,D          ;PREPARE TO CHECK IF DONE
       CP 40           ;ARE WE DONE?
       JR NZ,D4CA (LOOP) ;NO, JUMP BACK AND ADD AGAIN
       POP BC          ;YES - FETCH UPPER 32/16 BIT ADDITION
       LD A,BD         ;Is L EQUAL TO
       CP L            ;BD?
```

```
        JR NZ, D523 (FAIL)      ; No - Jump to FAIL
        LD A, B                 ; Yes - Is H equal
        CP H                    ; to B ?
        JR NZ, D523 (FAIL)      ; No - Jump to FAIL
        LD A, 1A                ; Yes - Is C equal
        CP C                    ; to 1A ?
        JR NZ, D523 (FAIL)      ; No - Jump to FAIL
        XOR A                   ; Yes - Clear A register
        CP B                    ; Is B equal to 0 ?
        JR NZ, D523 (FAIL)      ; No - Jump to FAIL
        EXX                     ; Prepare to get Test Count
        DEC B                   ; Dec the count
        LD A, B                 ; Put count into A reg
        EXX                     ; Put BC' back
        CP 00                   ; Is B equal to 0 ?
        JR NZ, D4BD (STAR)      ; No - Must retest Rom Again
        LD BC, 005A             ; Yes - BC = length of finish string
        LD DE, D435             ; DE = start address of finish string
        CALL 03C3 (STRING2)     ; Print string (no CLS)
        LD A, 02                ; Prepare to BEEP of
        CALL 30E6 (stka)        ; 2 seconds, (on STACK-A)
        LD A, 1E                ; and a pitch of
        CALL 30E6 (stka)        ; 30 (high pitch) (on STACK-A)
Out (D506) CALL 0436 (beep)     ; And now Produce BEEP (ALSO ENABLE INT)
WAIT (D509) CALL 02B0 (KBSC)    ; Get KEYBOARD STATUS
        INC E                   ; Inc E to get overflow
        XOR A                   ; Clear A reg
        CP E                    ; Is E Equal to 0 ?
        JR NZ, D513 (PASS)      ; Yes - A key is pressed - Jump
        JR D509 (WAIT)          ; No - A key is not pressed - rescan
PASS (D513) LD A, (D418) (flag) ; Fetch flag
        CP 00                   ; Is it Main Menu selection?
        JP NZ, (EXROM TEST)     ; No - Jump to EXROM Test
        JP D1B7 (MAIN MENU)     ; Yes - Return to Main Menu
OVER (D51E) POP BC              ; Fetch current BC count
        INC BC                  ; and increase by one
        INC DE                  ; also increase ROM address
```

```
        JR D4C6     (RETU)      ; and keep adding
FAIL (D523) LD BC,0010          ; BC = length of finish string
        LD DE,D48F              ; DE=start address of finish string
        CALL D3C3   (STRING2)   ; Print string (NO CLS)
        LD BC,0020              ; BC = length of FAILED string
        LD DE,D48F              ; DE = start address of FAILED string
        CALL D3C3   (STRING2)   ; Print string (NO CLS)
        LD BC,001E              ; BC = length of CONTINE string
        LD DE,D471              ; DE = start address of Continue string
        CALL D3C3   (STRING2)   ; Print string (NO CLS)
        LD A,02                 ; Prepare for a BEEP of
        CALL 30E6   (stka)      ; 2 seconds (on STACK-A)
        XOR A                   ; and a pitch of
        CALL 30E6   (stka)      ; 0 (middle 'C') (on STACK-A)
        JR 0506                 ; AND BEEP-END ROUTINE IN ONE GO
```

EXROM (12/01/85)

```
        DI
        LD BC, length
        LD DE, destination
        LD HL, Source
        LDIR
        CALL destination
        DI
        LD BC, 0000
        LD DE, 8000
        LD HL, 0000
Retu    Push BC
(97AB)  LD BC, 0000
Loop    LD A, (DE)
(97AF)  LD C, A
        XOR A
        ADC HL, BC
        JR C, over
        INC DE
        LD A, D
        CP A0
        JR NZ, loop
        JR finished
Over:   POP BC
(97BE)  INC BC
        INC DE
        JR Retn
finished POP BC
        LD A, BB
        ↓ AND so on...
```

RAM Res Code

```
org 0E000          9C77 (1C77)   length = 26h
DI
IN A, (F4)   }
EXX          }  Save bank Status
LD B, A      }
EXX
IN A, (FF)   }
SET 7, A     }  turn on EXROM
OUT (FF), A  }
XOR A        }
OUT (F4), A  }  Turn on Home bank
LD BC, 2000   (length)
LD DE, 8000   (destination)
LD HL, 0000   (source)
LDIR          (copy EXROM to RAM)
EXX
LD A, B
EXX
OUT (F4), A
IN A, (FF)
RES 7, A
OUT (FF), A
RET  ← 9C9C (1C9C)
```

Exrom Tester Ver 2.Ø ART
(94F6)

```
LD A,(5CA1)
AND A
JP Z,Menu (ØØ48)
LD BC,
LD DE,
CALL ØØA4
DI
~~XOR A~~
LD ~~(6000),A~~
[illegible]
~~CALL 6000~~
LD BC,ØØ3b
LD DE,8ØØØ
LD HL,1793
LDIR
JP 8ØØØ
```

9515 (1515) → POP BC

Same as rest of Exrom test
- Pass (9529)
- Fail (9557) (1557)
- wait (9538) (1538)
- Half fail (9544) (1544)

~~Ram Code~~

```
~~IN A,(FF)~~
9577 (1577) → EXX
9793 (1793) IN A,(FF)
LD C,A          } save port status
IN A,(F4)
LD B,A
EXX
~~XOR A~~       } ~~enable all of home bank~~
~~OUT (F4),A~~
~~INC A~~       ~~;make 'A'=1~~
```

Note!!! 9577 to 95AE are NOPS!!
(fill with SOMETHING!
(like 'Press any key to continue...'))

```
~~OUT (F~~
LD A,01          } set ~~EX~~ Chunk 0 on
OUT (F4),A
IN A,(FF)        } turn EXROM on
SET 7,A
OUT (FF),A
~~XOR A~~
star: ~~9589~~ LD BC,0000
97A6  LD DE,0000
      LD HL,0000
retu: ~~9592~~ PUSH BC
97AE  LD BC,0000
loop: ~~9596~~ LD A,(DE)
97B2  LD C,A
      XOR A
      ADC HL,BC
      JP C,over
      INC DE
      LD A,D
      CP 20
      JR NZ,loop
      EXX
      LD A,C         } Restore 'FFh'
      OUT (FF),A
      LD A,B         } Restore 'F4'
      OUT (F4),A
~~95AA~~ EXX
97B3  JP             ; pac to cartridge
over: ~~9796~~ POP BC
97C9  INC BC
      INC DE
      JR reta
```

97CE -> END

```
D6EC 012100          LD BC,0021
D6EF 11ACD7          LD DE,D7AC
D6F2 CDB7D3          CALL D3B7
D6F5 F3              DI
D6F6 AF              XOR A
D6F7 320C60          LD (600C),A
D6FA 321160          LD (6011),A
D6FD 3E80            LD A,80
D6FF 320F60          LD (600F),A
D702 3E20            LD A,20
D704 321260          LD (6012),A
D707 CD0060          CALL 6000
D70A D9              EXX
D70B 0614            LD B,14
D70D D9              EXX
D70E 010000          LD BC,0000
D711 110080          LD DE,8000
D714 210000          LD HL,0000
D717 C5              PUSH BC
D718 010000          LD BC,0000
D71B 1A              LD A,(DE)
D71C 4F              LD C,A
D71D AF              XOR A
D71E ED4A            ADC HL,BC
D720 385F            JR C,D781
D722 13              INC DE
D723 7A              LD A,D
D724 FEA0            CP A0
D726 20F3            JR NZ,D71B
D728 C1              POP BC
D729 3E4B            LD A,4B
D72B BD              CP L
D72C 2058            JR NZ,D786
D72E 3ECB            LD A,CB
D730 BC              CP H
D731 2053            JR NZ,D786
D733 3E0E            LD A,0E
D735 B9              CP C
D736 204E            JR NZ,D786
D738 AF              XOR A
D739 B8              CP B
D73A 204A            JR NZ,D786
D73C D9              EXX
D73D 05              DEC B
D73E 78              LD A,B
D73F D9              EXX
D740 FE00            CP 00
D742 20CA            JR NZ,D70E
D744 012A00          LD BC,002A
D747 11CDD7          LD DE,D7CD
D74A CDC3D3          CALL D3C3
D74D 011900          LD BC,0019
D750 1145D4          LD DE,D445
D753 CDC3D3          CALL D3C3
D756 011C00          LD BC,001C
D759 1173D4          LD DE,D473
D75C CDC3D3          CALL D3C3
D75F 3E02            LD A,02
D761 CDE630          CALL stka
D764 3E1E            LD A,1E
D766 CDE630          CALL stka
D769 CD3604          CALL beep
D76C CDB002          CALL kbsc
D76F 1C              INC E
D770 AF              XOR A
D771 BB              CP E
D772 2002            JR NZ,D776
D774 18F6            JR D76C
D776 3A18D4          LD A,(D418)
D779 FE00            CP 00
D77B C20000          JP NZ,0000
D77E C3B7D1          JP D1B7
D781 C1              POP BC
D782 03              INC BC
D783 13              INC DE
D784 1891            JR D717
D786 011000          LD BC,0010
D789 11CDD7          LD DE,D7CD
D78C CDC3D3          CALL D3C3
D78F 012500          LD BC,0025
D792 11F7D7          LD DE,D7F7
D795 CDC3D3          CALL D3C3
D798 011E00          LD BC,001E
D79B 1171D4          LD DE,D471
D79E CDC3D3          CALL D3C3
D7A1 3E02            LD A,02
D7A3 CDE630          CALL stka
D7A6 AF              XOR A
```

```
D726 20F3          JR NZ,D71B
D728 C1            POP BC
D729 3E4B          LD A,4B
D72B BD            CP L
D72C 2058          JR NZ,D786
D72E 3ECB          LD A,CB
D730 BC            CP H
D731 2053          JR NZ,D786
D733 3E0E          LD A,0E
D735 B9            CP C
D736 204E          JR NZ,D786
D738 AF            XOR A
D739 B8            CP B
D73A 204A          JR NZ,D786
D73C D9            EXX
D73D 05            DEC B
D73E 78            LD A,B
D73F D9            EXX
D740 FE00          CP 00
D742 20CA          JR NZ,D70E
D744 012A00        LD BC,002A
D747 11CDD7        LD DE,D7CD
D74A CDC3D3        CALL D3C3
D74D 011900        LD BC,0019
D750 1145D4        LD DE,D445
D753 CDC3D3        CALL D3C3
D756 011C00        LD BC,001C
D759 1173D4        LD DE,D473
D75C CDC3D3        CALL D3C3
D75F 3E02          LD A,02
D761 CDE630        CALL stka
D764 3E1E          LD A,1E
D766 CDE630        CALL stka
D769 CD3604        CALL beep
D76C CDB002        CALL Kbsc
D76F 1C            INC E
D770 AF            XOR A
D771 BB            CP E
D772 2002          JR NZ,D776
D774 18F6          JR D76C
D776 3A18D4        LD A,(D418)
D779 FE00          CP 00
D77B C20000        JP NZ,0000
D77E C3B7D1        JP D1B7
D781 C1            POP BC
D782 03            INC BC
D783 13            INC DE
D784 1891          JR D717
D786 011000        LD BC,0010
D789 11CDD7        LD DE,D7CD
D78C CDC3D3        CALL D3C3
D78F 012500        LD BC,0025
D792 11F7D7        LD DE,D7F7
D795 CDC3D3        CALL D3C3
D798 011E00        LD BC,001E
D79B 1171D4        LD DE,D471
D79E CDC3D3        CALL D3C3
D7A1 3E02          LD A,02
D7A3 CDE630        CALL stka
D7A6 AF            XOR A
D7A7 CDE630        CALL stka
D7AA 18BD          JR D769
```

```
D7AC  16            22  55212
D7AD  00             0  55213
D7AE  00             0  55214
D7AF  45            69  55215  E
D7B0  78           120  55216  x
D7B1  74           116  55217  t
D7B2  65           101  55218  e
D7B3  6E           110  55219  n
D7B4  74           116  55220  t
D7B5  69           105  55221  i
D7B6  6F           111  55222  o
D7B7  6E           110  55223  n
D7B8  20            32  55224
D7B9  52            82  55225  R
D7BA  4F            79  55226  O
D7BB  4D            77  55227  M
D7BC  20            32  55228
D7BD  54            84  55229  T
D7BE  65           101  55230  e
D7BF  73           115  55231  s
D7C0  74           116  55232  t
D7C1  20            32  55233
D7C2  49            73  55234  I
D7C3  6E           110  55235  n
D7C4  20            32  55236
D7C5  50            80  55237  P
D7C6  72           114  55238  r
D7C7  6F           111  55239  o
D7C8  67           103  55240  g
D7C9  72    GBAN   114  55241  r
D7CA  65           101  55242  e
D7CB  73           115  55243  s
D7CC  73           115  55244  s
D7CD  16            22  55245
D7CE  00             0  55246
D7CF  13            19  55247
D7D0  46            70  55248  F
D7D1  69           105  55249  i
D7D2  6E           110  55250  n
D7D3  69           105  55251  i
D7D4  73           115  55252  s
D7D5  68           104  55253  h
D7D6  65           101  55254  e
D7D7  64           100  55255  d
D7D8  20            32  55256
D7D9  20            32  55257
D7DA  20            32  55258
D7DB  0D    slug    13  55259
D7DC  0D            13  55260
D7DD  12            18  55261
D7DE  01             1  55262
D7DF  45            69  55263  E
D7E0  78           120  55264  x
D7E1  74           116  55265  t
D7E2  65           101  55266  e
D7E3  6E           110  55267  n
D7E4  74           116  55268  t
D7E5  69           105  55269  i
D7E6  6F           111  55270  o
D7E7  6E           110  55271  n
D7E8  20            32  55272
D7E9  52            82  55273  R
D7EA  4F            79  55274  O
D7EB  4D            77  55275  M
D7EC  20            32  55276
D7ED  50            80  55277  P
D7EE  41            65  55278  A
D7EF  53            83  55279  S
D7F0  53            83  55280  S
D7F1  45            69  55281  E
D7F2  44            68  55282  D
D7F3  12            18  55283
D7F4  00             0  55284
D7F5  0D    slug    13  55285
D7F6  0D            13  55286
D7F7  12            18  55287
D7F8  01             1  55288
D7F9  45            69  55289  E
D7FA  78           120  55290  x
D7FB  74           116  55291  t
D7FC  65           101  55292  e
D7FD  6E           110  55293  n
D7FE  74           116  55294  t
D7FF  69           105  55295  i
D800  6F           111  55296  o
D801  6E           110  55297  n
D802  20            32  55298
```

```
D7DD 12                    18  55261
D7DE 01                     1  55262
D7DF 45                    69  55263  E
D7E0 78                   120  55264  x
D7E1 74                   116  55265  t
D7E2 65                   101  55266  e
D7E3 6E                   110  55267  n
D7E4 74                   116  55268  t
D7E5 69                   105  55269  i
D7E6 6F                   111  55270  o
D7E7 6E                   110  55271  n
D7E8 20                    32  55272
D7E9 52                    82  55273  R
D7EA 4F                    79  55274  O
D7EB 4D                    77  55275  M
D7EC 20                    32  55276
D7ED 50                    80  55277  P
D7EE 41                    65  55278  A
D7EF 53                    83  55279  S
D7F0 53                    83  55280  S
D7F1 45                    69  55281  E
D7F2 44                    68  55282  D
D7F3 12                    18  55283
D7F4 00                     0  55284
D7F5 0D   slug              13  55285
D7F6 0D                    13  55286
D7F7 12                    18  55287
D7F8 01                     1  55288
D7F9 45                    69  55289  E
D7FA 78                   120  55290  x
D7FB 74                   116  55291  t
D7FC 65                   101  55292  e
D7FD 6E                   110  55293  n
D7FE 74                   116  55294  t
D7FF 69                   105  55295  i
D800 6F                   111  55296  o
D801 6E                   110  55297  n
D802 20                    32  55298
D803 52                    82  55299  R
D804 4F                    79  55300  O
D805 4D                    77  55301  M
D806 20                    32  55302
D807 46                    70  55303  F
D808 41                    65  55304  A
D809 49                    73  55305  I
D80A 4C                    76  55306  L
D80B 45                    69  55307  E
D80C 44                    68  55308  D
D80D 12                    18  55309
D80E 00                     0  55310
D80F 0D   slug              13  55311
D810 0D                    13  55312
D811 52                    82  55313  R
D812 65                   101  55314  e
D813 70                   112  55315  p
D814 6C                   108  55316  l
D815 61                    97  55317  a
D816 63                    99  55318  c
D817 65                   101  55319  e
D818 20                    32  55320
D819 55                    85  55321  U
D81A 32                    50  55322  2
D81B 30                    48  55323  0
```

By: Carl Miles
Version 1.0
August 13, 1985

Extention ROM Tester

Entry:

Flag at D418 determines if all functions test or main menu selection

Exit:

Tells you (on screen) if home ROM is good or bad.

Source Code: Entry (RAM: 06EC) (EPROM:)

```
(06EC)  LD BC,0021      ; BC=length of Title string
        LD DE,07AC      ; DE=address of Title string
        CALL 03AC (STRI); Print title string
        DI              ; disable interrupts
        XOR A           ; Clear A register
        LD (0000C),A    ; reset the LDIR...
        LD (00011),A    ; addresses in the...
        LD A,80         ; RAM-resident ...
        LD (0000E),A    ; code for a block...
        LD A,20         ; transfer of the ...
        LD (00012),A    ; EXROM into...
        CALL 6000       ; the RAM at 8000-9FFFh
        EXX             ; Exchange registers
        LD B,14         ; Do test 20 times
        EXX             ; Reexchange registers
START
(07CE)  LD BC,0000      ; BC = upper 16 bits of addition
        LD DE,8000      ; DE=address to start test
        LD HL,0000      ; HL = lower 16 bits of addition
RETN (0717) PUSH BC     ; Save BC as BC gets destroyed
        LD BC,0000      ; BC = 0000 (used for temp storage)
LOOP
(071B)  LD A,(DE)       ; Get contents of EXROM address
        LD C,A          ; Put into C for BC reg
        XOR A           ; Clear flags for proper addition
        ADC HL,BC       ; Add BC to HL
```

```
JR C, D78I (OVER)      ; IS HL full? Yes, Jump to OVER
INC DE                 ; No - INC address
LD A,D                 ; Prepare to check if done
CP AØ                  ; Are we done?
JR NZ, D71B (LOOP)     ; No, Jump back and add again
POP BC                 ; Yes - Fetch upper 16 bit addition
LD A,4B                ; Is L equal to...
CP L                   ; 4B?
JR NZ, D786 (FAIL)     ; No - Jump to fail
LD A, CB               ; Yes - Is H equal to...
CP H                   ; CB?
JR NZ, D786 (FAIL)     ; No - Jump to fail
LD A, ØE               ; Yes - Is C equal to...
CP C                   ; ØE?
JR NZ, D786 (FAIL)     ; No - Jump to fail
XOR A                  ; Yes - Is B equal to...
CP B                   ; ØØ?
JR NZ, D786 (FAIL)     ; No - Jump to fail
EXX                    ; Prepare to Get test Count
DEC B                  ; Dec the Count
LD A,B                 ; put the count into A reg
EXX                    ; Put BC' pack
CP ØØ                  ; is B equal to Ø?
JR NZ, D7ØE (STAR)     ; No - Must retest EXROM again
LD BC, ØØ2A            ; Yes: BC = length of finish string
LD DE, D7CD            ; DE = address of finish string
CALL D3C3 (STRI)       ; print finish string
LD BC, ØØ19            ; BC = length of 20 string
LD DE, D445            ; DE = address of finish 20 string
CALL D3C3 (STR1)       ; print 20 string
LD BC, ØØ1C            ; BC = length of Cont string
LD DE, D473            ; DE = address of Cont string
CALL D3C3 (STR1)       ; print Cont string
LD A, Ø2               ; Prepare to BEEP of...
CALL 3ØE6 (STKA)       ; 2 seconds...
LD A, 1E               ; and a pitch...
CALL 3ØE6 (STKA)       ; of 3Ø...
```

```
OUT (D769)  CALL Ø436 (beep)     ; and BEEP it
WAIT (D76C) CALL Ø2BØ (kbsc)     ; Get keyboard scan
            INC E                ; INC E to get overflow
            XOR A                ; Clear A reg
            CP E                 ; Is E equal to Ø?
            JR NZ, D776          ; Yes - a key is pressed - Jump
            JR D76C              ; No - no key pressed, retry
PASS (D776) LD A, (D418)         ; Fetch flag
            CP ØØ                ; is it a Main Menu selection?
            JP NZ,               ; No - Jump to TV test
            JP D1B7              ; Yes - Jump to Main Menu
OVER (D781) POP BC               ; Fetch current BC count...
            INC BC               ; and increase by one...
            INC DE               ; also increase EXROM address...
            JR D717 (RETU)       ; and keep adding
FAIL (D786) LD BC, ØØ1Ø          ; BC = length of finish string
            LD DE, D7CD          ; DE = address of finish string
            CALL D3C3            ; print finish string
            LD BC, ØØ25          ; BC = length of FAILED string
            LD DE, D7F7          ; DE = address of FAILED string
            CALL D3C3            ; print FAILED string
            LD BC, ØØ1E          ; BC = length of Cont string
            LD DE, D471          ; DE = address of Cont string
            CALL D3C3            ; print Cont string
            LD A, Ø2             ; Prepare to BEEP of
            CALL 3ØE6            ; 2 seconds and a pitch...
            XOR A                ; of Ø...
            CALL 3ØE6            ; and set on stack...
            JR D769              ; and finish test through out
```

CASSETTE

97CE

```
D93B 016600          LD BC,nmi
D93E 1134DA          LD DE,DA34
D941 CDB7D3          CALL D3B7
D944 CDDAD9          CALL D9DA
D947 ED5B3D5C        LD DE,(5C3D)
D94B EB              EX DE,HL
D94C 112CDA          LD DE,DA2C
D94F 73              LD (HL),E
D950 23              INC HL
D951 72              LD (HL),D
D952 011100          LD BC,0011
D955 1100A0          LD DE,A000
D958 2157DB          LD HL,DB57
D95B EDB0            LDIR
D95D 0E05            LD C,05
D95F AF              XOR A
D960 CDE8D9          CALL D9E8
D963 0D              DEC C
D964 20F9            JR NZ,D95F
D966 016900          LD BC,0069
D969 119ADA          LD DE,DA9A
D96C CDB7D3          CALL D3B7
D96F CDDAD9          CALL D9DA
D972 ED5B3D5C        LD DE,(5C3D)
D976 EB              EX DE,HL
D977 112CDA          LD DE,DA2C
D97A 73              LD (HL),E
D97B 23              INC HL
D97C 72              LD (HL),D
D97D 0E05            LD C,05
D97F 3E02            LD A,02
D981 CDE8D9          CALL D9E8
D984 0D              DEC C
D985 20F8            JR NZ,D97F
D987 013A00          LD BC,003A
D98A 1103DB          LD DE,DB03
D98D CDB7D3          CALL D3B7
D990 011C00          LD BC,001C
D993 1173D4          LD DE,D473
D996 CDC3D3          CALL D3C3
D999 3E02            LD A,02
D99B CDE630          CALL 30E6
D99E 3E1E            LD A,1E
D9A0 CDE630          CALL 30E6
D9A3 CD3604          CALL beep
D9A6 CDDAD9          CALL D9DA
D9A9 3AB05C          LD A,(5CB0)
D9AC FE00            CP 00
D9AE C20000          JP NZ,0000
D9B1 C3B7D1          JP D1B7
D9B4 012000          LD BC,0020
D9B7 1103DB          LD DE,DB03
D9BA CDB7D3          CALL D3B7
D9BD 011A00          LD BC,001A
D9C0 113DDB          LD DE,DB3D
D9C3 CDC3D3          CALL D3C3
D9C6 011C00          LD BC,001C
D9C9 1173D4          LD DE,D473
D9CC CDC3D3          CALL D3C3
D9CF 3E02            LD A,02
D9D1 CDE630          CALL 30E6
D9D4 AF              XOR A
D9D5 CDE630          CALL 30E6
D9D8 18C9            JR D9A3
D9DA 063C            LD B,3C
D9DC 76              HALT
D9DD 10FD            DJNZ,D9DC
D9DF CDB002          CALL kbsc
D9E2 1C              INC E
D9E3 AF              XOR A
D9E4 BB              CP E
D9E5 28F8            JR Z,D9DF
D9E7 C9              RET
D9E8 F3              DI
D9E9 C5              PUSH BC
D9EA F5              PUSH AF
D9EB 3EF8            LD A,F8
D9ED FDA653          AND (IY+53)
D9F0 C605            ADD A,05
D9F2 328D5C          LD (5C8D),A
D9F5 DBFF            IN A,(FF)
D9F7 CBFF            SET 7,A
D9F9 D3FF            OUT (FF),A
D9FB DBF4            IN A,(F4)
```

```
D9AE C20000          JP NZ,0000
D9B1 C3B7D1          JP D1B7
D9B4 012000          LD BC,0020
D9B7 1103DB          LD DE,DB03
D9BA CDB7D3          CALL D3B7
D9BD 011A00          LD BC,001A
D9C0 113DDB          LD DE,DB3D
D9C3 CDC3D3          CALL D3C3
D9C6 011C00          LD BC,001C
D9C9 1173D4          LD DE,D473
D9CC CDC3D3          CALL D3C3
D9CF 3E02            LD A,02
D9D1 CDE630          CALL 30E6
D9D4 AF              XOR A
D9D5 CDE630          CALL 30E6
D9D8 18C9            JR D9A3
D9DA 063C            LD B,3C
D9DC 76              HALT
D9DD 10FD            DJNZ,D9DC
D9DF CDB002          CALL kbsc
D9E2 1C              INC E
D9E3 AF              XOR A
D9E4 BB              CP E
D9E5 28F8            JR Z,D9DF
D9E7 C9              RET
D9E8 F3              DI
D9E9 C5              PUSH BC
D9EA F5              PUSH AF
D9EB 3EF8            LD A,F8
D9ED FDA653          AND (IY+53)
D9F0 C605            ADD A,05
D9F2 328D5C          LD (5C8D),A
D9F5 DBFF            IN A,(FF)
D9F7 CBFF            SET 7,A
D9F9 D3FF            OUT (FF),A
D9FB DBF4            IN A,(F4)
D9FD 32B15C          LD (5CB1),A
DA00 3E01            LD A,01
DA02 D3F4            OUT (F4),A
DA04 F1              POP AF
DA05 32745C          LD (5C74),A
DA08 DD2100A0        LD IX,A000
DA0C 210004          LD HL,0400
DA0F FB              EI
DA10 CDC904          CALL 04C9
DA13 F3              DI
DA14 F5              PUSH AF
DA15 3AB15C          LD A,(5CB1)
DA18 D3F4            OUT (F4),A
DA1A DBFF            IN A,(FF)
DA1C CBBF            RES 7,A
DA1E D3FF            OUT (FF),A
DA20 3EF8            LD A,F8
DA22 FDA653          AND (IY+53)
DA25 328D5C          LD (5C8D),A
DA28 F1              POP AF
DA29 C1              POP BC
DA2A FB              EI
DA2B C9              RET
DA2C 21B4D9          LD HL,D9B4
DA2F C1              POP BC
DA30 E5              PUSH HL
DA31 C5              PUSH BC
DA32 18DF            JR DA13
```

```
DA34  16          22  55860
DA35  00           0  55861
DA36  00           0  55862
DA37  54          84  55863  T
DA38  68         104  55864  h
DA39  69         105  55865  i
DA3A  73         115  55866  s
DA3B  20          32  55867
DA3C  49          73  55868  I
DA3D  73         115  55869  s
DA3E  20          32  55870
DA3F  54          84  55871  T
DA40  68         104  55872  h
DA41  65         101  55873  e
DA42  20          32  55874
DA43  43          67  55875  C
DA44  61          97  55876  a
DA45  73         115  55877  s
DA46  73         115  55878  s
DA47  65         101  55879  e
DA48  74         116  55880  t
DA49  74         116  55881  t
DA4A  65         101  55882  e
DA4B  20          32  55883
DA4C  54          84  55884  T
DA4D  65         101  55885  e
DA4E  73         115  55886  s
DA4F  74         116  55887  t
DA50  2E          46  55888  .
DA51  20          32  55889
DA52  49          73  55890  I
DA53  74         116  55891  t
DA54  0D          13  55892
DA55  57          87  55893  W
DA56  69         105  55894  i
DA57  6C         108  55895  l
DA58  6C         108  55896  l
DA59  20          32  55897
DA5A  53          83  55898  S
DA5B  61          97  55899  a
DA5C  76         118  55900  v
DA5D  65         101  55901  e
DA5E  20          32  55902
DA5F  41          65  55903  A
DA60  20          32  55904
DA61  42          66  55905  B
DA62  6C         108  55906  l
DA63  6F         111  55907  o
DA64  63          99  55908  c
DA65  6B         107  55909  k
DA66  20          32  55910
DA67  4F          79  55911  O
DA68  66         102  55912  f
DA69  20          32  55913
DA6A  4D          77  55914  M
DA6B  65         101  55915  e
DA6C  6D         109  55916  m
DA6D  6F         111  55917  o
DA6E  72         114  55918  r
DA6F  79         121  55919  y
DA70  20          32  55920
DA71  46          70  55921  F
DA72  69         105  55922  i
DA73  76         118  55923  v
DA74  65         101  55924  e
DA75  54          84  55925  T
DA76  69         105  55926  i
DA77  6D         109  55927  m
DA78  65         101  55928  e
DA79  73         115  55929  s
DA7A  2E          46  55930  .
DA7B  20          32  55931
DA7C  50          80  55932  P
DA7D  72         114  55933  r
DA7E  65         101  55934  e
DA7F  73         115  55935  s
DA80  73         115  55936  s
DA81  20          32  55937
DA82  41          65  55938  A
DA83  6E         110  55939  n
DA84  79         121  55940  y
DA85  20          32  55941
DA86  4B          75  55942  K
DA87  65         101  55943  e
DA88  79         121  55944  y
DA89  20          32  55945
DA8A  54          84  55946  T
```

```
DA72 69          105  55922  i
DA73 76          118  55923  v
DA74 65          101  55924  e
DA75 54           84  55925  T
DA76 69          105  55926  i
DA77 6D          109  55927  m
DA78 65          101  55928  e
DA79 73          115  55929  s
DA7A 2E           46  55930  .
DA7B 20           32  55931
DA7C 50           80  55932  P
DA7D 72          114  55933  r
DA7E 65          101  55934  e
DA7F 73          115  55935  s
DA80 73          115  55936  s
DA81 20           32  55937
DA82 41           65  55938  A
DA83 6E          110  55939  n
DA84 79          121  55940  y
DA85 20           32  55941
DA86 4B           75  55942  K
DA87 65          101  55943  e
DA88 79          121  55944  y
DA89 20           32  55945
DA8A 54           84  55946  T
DA8B 6F          111  55947  o
DA8C 20           32  55948
DA8D 53           83  55949  S
DA8E 74          116  55950  t
DA8F 61           97  55951  a
DA90 72          114  55952  r
DA91 74          116  55953  t
DA92 0D           13  55954
DA93 54           84  55955  T
DA94 65          101  55956  e
DA95 73          115  55957  s
DA96 74          116  55958  t
DA97 2E           46  55959  .
DA98 2E           46  55960  .
DA99 2E           46  55961  .
DA9A 16           22  55962
DA9B 00            0  55963
DA9C 00            0  55964
DA9D 54           84  55965  T
DA9E 68          104  55966  h
DA9F 69          105  55967  i
DAA0 73          115  55968  s
DAA1 20           32  55969
DAA2 54           84  55970  T
DAA3 65          101  55971  e
DAA4 73          115  55972  s
DAA5 74          116  55973  t
DAA6 20           32  55974
DAA7 57           87  55975  W
DAA8 69          105  55976  i
DAA9 6C          108  55977  l
DAAA 6C          108  55978  l
DAAB 20           32  55979
DAAC 4E           78  55980  N
DAAD 6F          111  55981  o
DAAE 77          119  55982  w
DAAF 20           32  55983
DAB0 56           86  55984  V
DAB1 65          101  55985  e
DAB2 72          114  55986  r
DAB3 69          105  55987  i
DAB4 66          102  55988  f
DAB5 79          121  55989  y
DAB6 20           32  55990
DAB7 46           70  55991  F
DAB8 69          105  55992  i
DAB9 76          118  55993  v
DABA 65          101  55994  e
DABB 0D           13  55995
DABC 54           84  55996  T
DABD 69          105  55997  i
DABE 6D          109  55998  m
DABF 65          101  55999  e
DAC0 73          115  56000  s
DAC1 2E           46  56001  .
DAC2 20           32  56002
DAC3 53           83  56003  S
DAC4 65          101  56004  e
DAC5 74          116  56005  t
DAC6 20           32  56006
DAC7 55           85  56007  U
DAC8 70          112  56008  p
DAC9 20           32  56009
DACA 54           84  56010  T
DACB 61           97  56011  a
```

```
DAC1 21          33 56001 !
DAC2 20          32 56002
DAC3 53          83 56003 S
DAC4 65         101 56004 e
DAC5 74         116 56005 t
DAC6 20          32 56006
DAC7 55          85 56007 U
DAC8 70         112 56008 p
DAC9 20          32 56009
DACA 54          84 56010 T
DACB 61          97 56011 a
DACC 70         112 56012 p
DACD 65         101 56013 e
DACE 20          32 56014
DACF 46          70 56015 F
DAD0 6F         111 56016 o
DAD1 72         114 56017 r
DAD2 20          32 56018
DAD3 56          86 56019 V
DAD4 65         101 56020 e
DAD5 72         114 56021 r
DAD6 69         105 56022 i
DAD7 66         102 56023 f
DAD8 69         105 56024 i
DAD9 6E         110 56025 n
DADA 67         103 56026 g
DADB 2C          44 56027 ,
DADC 0D          13 56028
DADD 41          65 56029 A
DADE 6E         110 56030 n
DADF 64         100 56031 d
DAE0 20          32 56032
DAE1 50          80 56033 P
DAE2 72         114 56034 r
DAE3 65         101 56035 e
DAE4 73         115 56036 s
DAE5 73         115 56037 s
DAE6 20          32 56038
DAE7 41          65 56039 A
DAE8 6E         110 56040 n
DAE9 79         121 56041 y
DAEA 20          32 56042
DAEB 4B          75 56043 K
DAEC 65         101 56044 e
DAED 79         121 56045 y
DAEE 20          32 56046
DAEF 54          84 56047 T
DAF0 6F         111 56048 o
DAF1 20          32 56049
DAF2 53          83 56050 S
DAF3 74         116 56051 t
DAF4 61          97 56052 a
DAF5 72         114 56053 r
DAF6 74         116 56054 t
DAF7 0D          13 56055
DAF8 56          86 56056 V
DAF9 65         101 56057 e
DAFA 72         114 56058 r
DAFB 69         105 56059 i
DAFC 66         102 56060 f
DAFD 69         105 56061 i
DAFE 6E         110 56062 n
DAFF 67         103 56063 g
DB00 2E          46 56064 .
DB01 2E          46 56065 .
DB02 2E          46 56066 .
DB03 16          22 56067
DB04 00           0 56068
DB05 00           0 56069
DB06 43          67 56070 C
DB07 61          97 56071 a
DB08 73         115 56072 s
DB09 73         115 56073 s
DB0A 65         101 56074 e
DB0B 74         116 56075 t
DB0C 74         116 56076 t
DB0D 65         101 56077 e
DB0E 20          32 56078
DB0F 54          84 56079 T
DB10 65         101 56080 e
DB11 73         115 56081 s
DB12 74         116 56082 t
DB13 20          32 56083
DB14 4E          78 56084 N
DB15 6F         111 56085 o
DB16 77         119 56086 w
DB17 20          32 56087
DB18 43          67 56088 C
DB19 6F         111 56089 o
DB1A 6D         109 56090 m
```

```
DB05 00            0  56069
DB06 43           67  56070  C
DB07 61           97  56071  a
DB08 73          115  56072  s
DB09 73          115  56073  s
DB0A 65          101  56074  e
DB0B 74          116  56075  t
DB0C 74          116  56076  t
DB0D 65          101  56077  e
DB0E 20           32  56078
DB0F 54           84  56079  T
DB10 65          101  56080  e
DB11 73          115  56081  s
DB12 74          116  56082  t
DB13 20           32  56083
DB14 4E           78  56084  N
DB15 6F          111  56085  o
DB16 77          119  56086  w
DB17 20           32  56087
DB18 43           67  56088  C
DB19 6F          111  56089  o
DB1A 6D          109  56090  m
DB1B 70          112  56091  p
DB1C 6C          108  56092  l
DB1D 65          101  56093  e
DB1E 74          116  56094  t
DB1F 65          101  56095  e
DB20 2E           46  56096  .
DB21 0D           13  56097
DB22 0D           13  56098
DB23 12           18  56099
DB24 01            1  56100
DB25 43           67  56101  C
DB26 61           97  56102  a
DB27 73          115  56103  s
DB28 73          115  56104  s
DB29 65          101  56105  e
DB2A 74          116  56106  t
DB2B 74          116  56107  t
DB2C 65          101  56108  e
DB2D 20           32  56109
DB2E 54           84  56110  T
DB2F 65          101  56111  e
DB30 73          115  56112  s
DB31 74          116  56113  t
DB32 20           32  56114
DB33 50           80  56115  P
DB34 41           65  56116  A
DB35 53           83  56117  S
DB36 53           83  56118  S
DB37 45           69  56119  E
DB38 44           68  56120  D
DB39 12           18  56121
DB3A 00            0  56122
DB3B 0D           13  56123
DB3C 0D           13  56124
DB3D 12           18  56125
DB3E 01            1  56126
DB3F 43           67  56127  C
DB40 61           97  56128  a
DB41 73          115  56129  s
DB42 73          115  56130  s
DB43 65          101  56131  e
DB44 74          116  56132  t
DB45 74          116  56133  t
DB46 65          101  56134  e
DB47 20           32  56135
DB48 54           84  56136  T
DB49 65          101  56137  e
DB4A 73          115  56138  s
DB4B 74          116  56139  t
DB4C 20           32  56140
DB4D 46           70  56141  F
DB4E 41           65  56142  A
DB4F 49           73  56143  I
DB50 4C           76  56144  L
DB51 45           69  56145  E
DB52 44           68  56146  D
DB53 12           18  56147
DB54 00            0  56148
DB55 0D           13  56149
DB56 0D           13  56150
DB57 03            3  56151
DB58 54           84  56152  T
DB59 65          101  56153  e
DB5A 73          115  56154  s
DB5B 74          116  56155  t
DB5C 69          105  56156  i
DB5D 6E          110  56157  n
```

```
DB39 12          18 56121
DB3A 00           0 56122
DB3B 0D          13 56123
DB3C 0D          13 56124
DB3D 12          18 56125
DB3E 01           1 56126
DB3F 43          67 56127 C
DB40 61          97 56128 a
DB41 73         115 56129 s
DB42 73         115 56130 s
DB43 65         101 56131 e
DB44 74         116 56132 t
DB45 74         116 56133 t
DB46 65         101 56134 e
DB47 20          32 56135
DB48 54          84 56136 T
DB49 65         101 56137 e
DB4A 73         115 56138 s
DB4B 74         116 56139 t
DB4C 20          32 56140
DB4D 46          70 56141 F
DB4E 41          65 56142 A
DB4F 49          73 56143 I
DB50 4C          76 56144 L
DB51 45          69 56145 E
DB52 44          68 56146 D
DB53 12          18 56147
DB54 00           0 56148
DB55 0D          13 56149
DB56 0D          13 56150
DB57 03           3 56151
DB58 54          84 56152 T
DB59 65         101 56153 e
DB5A 73         115 56154 s
DB5B 74         116 56155 t
DB5C 69         105 56156 i
DB5D 6E         110 56157 n
DB5E 67         103 56158 g
DB5F 2E          46 56159 .
DB60 2E          46 56160 .
DB61 2E          46 56161 .
DB62 00           0 56162
DB63 04           4 56163
DB64 00           0 56164
DB65 10          16 56165
DB66 00           0 56166
DB67 00           0 56167
```

BY: CARL MILES
VERSION 1.Ø
AUGUST 16, 1985

CASSETTE TESTER

ENTRY:

FLAG AT 5CBØ DETERMINES IF ALL FUNCTIONS TEST OR MAIN MENU SELECTION

EXIT:

TELLS YOU (ON SCREEN) IF CASSETTE TEST PASSED OR FAILED

SOURCE CODE: ENTRY (RAM: D93B) (EPROM:)

```
Star (~~D43B~~)  LD BC,ØØ66          ; BC=length of title string
  97CE           LD DE,DA34          ; DE=address of title string
                 CALL D3B7 (stri)    ; print string (and CLS_)
                 CALL D9DA (wait)    ; wait for a key press
                 LD DE,(5C3D)        ; DE=error stack pointer
                 EX DE,HL            ; now in 'HL'
                 LD DE,DA2C (fail)   ; prepare to change it with fail address
                 LD (HL),E           ; change error address one byte...
                 INC HL              ; at...
                 LD (HL),D           ; a time
                 LD BC,ØØ11          ; BC=length of tahe 'header'
                 LD DE,AØØØ          ; DE=destination address of 'header'
                 LD HL,DB57          ; HL=source address of 'header'
                 LDIR                ; copy 'header' there
                 LD C,Ø5             ; do save 5 times
loop (~~D4CE~~)  XOR A               ; singnal 'save'
  97E7           CALL D9E8 (tape)    ; and save now...
                 DEC C               ; decrease count by one
                 JR NZ,D95F (loop)   ; if non zery, resave again
                 LD BC,ØØ69          ; BC=length of load string
                 LD DE,D9DA          ; DE=address of load string
                 CALL D3B7           PRINT string (and CLS_)
                 LD DE,(5C3D)        ; get error stack pointer
                 EX DE,HL            ; put into 'HL'
                 LD DE,DA2C (fail)   ; change error address to point to fail
```

```
                LD (HL),E       ;and change one byte...
                INC HL          ;at...
                LD (HL),D       ;a time
                LD C,05         ;do load 5 times
lop1 (97F9)     LD A,02         ;signal 'verify'
                CALL D9E8 (tape) ;and 'verify' now
                DEC C           ;decrease count by one
                JR NZ,D97F (lop1) ;if non zero, reverify again
                LD BC,003A      ;BC=length of PASSED string
                LD DE,DB03      ;DE=address of PASSED string
                CALL D3B7 (stri) ;print string (and CLS-)
                LD BC,001C      ;BC=length of continue string
                LD DE,D473      ;DE=address of continee string
                CALL D3C3 (Str1) ;print string (no CLS-)
                LD A,02         ;Make a BEEP of
                CALL 30E6 (stka) ;2 seconds
                LD A,1E         ;and a pitch of
                CALL 30E6 (stka) ;30
                CALL 0436 (beep) ;and BEEP now
outc (981F)     CALL D9DA (wait) ;wait for a key press
                LD A,(5CB0)     ;get flag
                CP 00           ;is it a main menu selection
                JP NZ,0000 (keyboard test) ;NO-goto keyboard test
                JP D1B7 (main)  ;YES-goto main menu
fail (981C)     LD BC,0020      ;BC=length of complete string
                LD DE,DB03      ;DE=address of complete string
                CALL D3B7 (stri) ;print string (with CLS-)
                LD BC,001A      ;BC=length of FAILED string
                LD DE,DB30      ;DE=address of FAILED string
                CALL D3C3 (str1) ;print string (without CLS-)
                LD BC,001C      ;BC=lengtho of Continue string
                LD DE,D473      ;DE=address of Continea string
                CALL D3C3 (str1) ;print string
                LD A,02         ;Prepare a BEEP of
                CALL 30E6 (stka) ;2 seconds
                XOR A           ;at a...
                CALL 30E6 (stka) ;pitch of 0
```

BY: CARL MILES
VERSION 1.Ø
AUGUST 16, 1985

CASSETTE TESTER

ENTRY:

FLAG AT 5CBØ DETERMINES IF ALL FUNCTIONS TEST OR MAIN MENU SELECTION

EXIT:

TELLS YOU (ON SCREEN) IF CASSETTE TEST PASSED OR FAILED

SOURCE CODE: ENTRY (RAM: D93B) (EPROM:)

```
Star (~~D93B~~)  LD BC,ØØ66          ; BC=length of title string
97CE             LD DE,DA34          ; DE=address of title string
                 CALL D3B7 (stri)    ; print string (and CLS_)
                 CALL D9DA (wait)    ; wait for a key press
                 LD DE,(5C3D)        ; DE=error stack pointer
                 EX DE,HL            ; now in 'HL'
                 LD DE,DA2C (fail)   ; prepare to change it with fail address
                 LD (HL),E           ; change error address one byte...
                 INC HL              ; at...
                 LD (HL),D           ; a time
                 LD BC,ØØ11          ; BC=length of tahe 'header'
                 LD DE,AØØØ          ; DE=destination address of 'header'
                 LD HL,DB57          ; HL=source address of 'header'
                 LDIR                ; copy 'header' there
                 LD C,Ø5             ; do save 5 times
loop (~~D9E8~~)  XOR A               ; singnal 'save'
97E7             CALL D9E8 (tape)    ; and save now...
                 DEC C               ; decrease count by one
                 JR NZ,D95F (loop)   ; if non zery, resave again
                 LD BC,ØØ69          ; BC=length of load string
                 LD DE,D9DA          ; DE=address of load string
                 CALL D3B7           PRINT string (and CLS_)
                 LD DE,(5C3D)        ; get error stack pointer
                 EX DE,HL            ; put into 'HL'
                 LD DE,DA2C (fail)   ; change error address to point to fail
```

```
                LD (HL),E       ;and change one byte...
                INC HL          ;at...
                LD (HL),D       ;a time
                LD C,05         ;do load 5 times
lop1 (~~D97F~~) LD A,02         ;signal 'verify'
97F9            CALL D9E8 (tape) ;and 'verify' now
                DEC C           ;decrease count by one
                JR NZ,D97F (lop1) ;if non zero, reverify again
                LD BC,003A      ;BC=length of PASSED string
                LD DE,DB03      ;DE=address of PASSED string
                CALL D3B7 (str1) ;print string (and CLS-)
                LD BC,001C      ;BC=length of continue string
                LD DE,D473      ;DE=address of continee string
                CALL D3C3 (str1) ;print string (no CLS-)
                LD A,02         ;Make a BEEP of
                CALL 03E6 (stka) ;2 seconds
                LD A,1E         ;and a pitch of
                CALL 03E6 (stka) ;30
~~outc (D981)~~ CALL 0436 (beep) ;and BEEP now
outc (981F)     CALL D9DA (wait) ;wait for a key press
                LD A,(5CB0)     ;get flag
                CP 00           ;is it a main menu selection
                JP NZ,0000 (keyboard test) ;NO-goto keyboard test
                JP D1B7 (main)  ;YES-goto main menu
fail (~~D81C~~) LD BC,0020      ;BC=length of complete string
(981C)          LD DE,DB03      ;DE=address of complete string
                CALL D3B7 (str1) ;print string (with CLS-)
                LD BC,001A      ;BC=length of FAILED string
                LD DE,DB3D      ;DE=address of FAILED string
                CALL D3C3 (str1) ;print string (without CLS-)
                LD BC,001C      ;BC=lengtho of continue string
                LD DE,D473      ;DE=address of Continee string
                CALL D3C3 (str1) ;print string
                LD A,02         ;Prepare a BEEP of
                CALL 03E6 (stka) ;2 seconds
                XOR A           ;at a...
                CALL 03E6 (stka) ;pitch of 0
```

```
                JR D9A3 (outc)          ; and finish through outc
wait (D9DA)     LD B,3C                 ; delay of 60 interrupts or...
dely (D9DC)     HALT                    ; one second...
                DJNZ, D9DC (dely)       ; and complete delay
wai1 (D9DF)     CALL Ø2BØ (kbsc)        ; get keyboard status
                INC E                   ; increase E to get overflow
                XOR A                   ; clear A reg
                CP E                    ; is E equal to Ø?
                JR Z, D9DF (wai1)       ; yes - no key is pressed - rescan
                RET                     ; No key is pressed - return
tape (~~[illegible]~~)  DI              ; Disable interrupts
(9836)          PUSH BC                 ; save counter
                PUSH AF                 ; save tape flag
                LD A,F8                 ; change the INK...
                AND (IX+53)             ; color to match...
                ADD A,Ø5                ; the screen PAPER...
                LD (5C8D),A             ; color of CYAN
                IN A,(FF)               ; get EXROM status
                SET 7,A                 ; turn EXROM on
                OUT (FF),A              ; put into port
                IN A,(F4)               ; get dock selection status
                LD (5CB1),A             ; save status
                LD A,Ø1                 ; turn on chunk Ø only
                OUT (F4),A              ; put into port
                POP AF                  ; get tape flag
                LD (5C74),A             ; put into T ADDR-lo
                LD IX,AØØØ              ; IX = base address of 'header'
                LD HL,Ø4ØØ              ; HL = number of bytes to save
                EI                      ; Enable interrupts
                CALL Ø4C9 (tape) (IN EXROM) ; perform cassette function (in EXROM)
bad1 (~~[illegible]~~)  DI              ; Disable interrupts
(9856)          PUSH AF                 ; save AF status
                LD A,(5CB1)             ; get original dock status
                OUT (F4),A              ; put into port
                IN A,(FF)               ; get EXROM bit
                RES 7,A                 ; turn off EXROM
                OUT (FF),A              ; put into port
```

```
        LD A,F8          ; Prepare to change....
        AND (IY+53)      ; INK color....
        LD (5C8D),A      ; to BLACK
        POP AF           ; get AF status
        POP BC           ; get count
        EI               ; Enable interrupts
        RET              ; Return
fail    LD HL,09B4 (fail)  ; Let HL = address of 'fail' routine
(9864)  POP BC           ; get count
        PUSH HL          ; put address of 'fail' underneath 'BC'
        PUSH BC          ; put count above 'fail' address
(986A)  JR DAIB (bad1)   ; finish through bad 1
```

END (986C)

```
DD4F  01E701          LD BC,01E7
DD52  1168DB          LD DE,DB68
DD55  CDB7D3          CALL D3B7
DD58  CDDAD9          CALL D9DA
DD5B  CDB002          CALL kbsc
DD5E  1C              INC E
DD5F  AF              XOR A
DD60  BB              CP E
DD61  28F8            JR Z,DD5B
DD63  3E7D            LD A,7D
DD65  01CCCD          LD BC,CDCC
DD68  114CCC          LD DE,CC4C
DD6B  CD742E          CALL stk5
DD6E  AF              XOR A
DD6F  CDE630          CALL stka
DD72  CD3604          CALL beep
DD75  CD0920          CALL brek
DD78  38E1            JR C,DD5B
DD7A  3AB05C          LD A,(nmia)
DD7D  A7              AND A
DD7E  C20000          JP NZ,0000
DD81  C3B7D1          JP D1B7

DB68  16               22  56168
DB69  00                0  56169
DB6A  00                0  56170
DB6B  54               84  56171  T
DB6C  68              104  56172  h
DB6D  69              105  56173  i
DB6E  73              115  56174  s
DB6F  20               32  56175
DB70  49               73  56176  I
DB71  73              115  56177  s
DB72  20               32  56178
DB73  54               84  56179  T
DB74  68              104  56180  h
DB75  65              101  56181  e
DB76  20               32  56182
DB77  4B               75  56183  K
DB78  65              101  56184  e
DB79  79              121  56185  y
DB7A  62               98  56186  b
DB7B  6F              111  56187  o
DB7C  61               97  56188  a
DB7D  72              114  56189  r
DB7E  64              100  56190  d
DB7F  20               32  56191
DB80  54               84  56192  T
DB81  65              101  56193  e
DB82  73              115  56194  s
DB83  74   stk5       116  56195  t
DB84  2E               46  56196  .
DB85  20               32  56197
DB86  49               73  56198  I
DB87  74              116  56199  t
DB88  0D               13  56200
DB89  57               87  56201  W
DB8A  69              105  56202  i
DB8B  6C              108  56203  l
DB8C  6C              108  56204  l
DB8D  20               32  56205
DB8E  54               84  56206  T
DB8F  65              101  56207  e
DB90  73              115  56208  s
DB91  74              116  56209  t
DB92  20               32  56210
DB93  41               65  56211  A
DB94  6C              108  56212  l
DB95  6C              108  56213  l
DB96  20               32  56214
DB97  34               52  56215  4
DB98  31               49  56216  1
DB99  20               32  56217
DB9A  4B               75  56218  K
DB9B  65              101  56219  e
DB9C  79              121  56220  y
DB9D  73              115  56221  s
DB9E  20               32  56222
DB9F  41               65  56223  A
DBA0  6E              110  56224  n
DBA1  64              100  56225  d
DBA2  20               32  56226
DBA3  54               84  56227  T
DBA4  68              104  56228  h
DBA5  65              101  56229  e
```

```
DB96 20                32  56214
DB97 34                52  56215  4
DB98 31                49  56216  1
DB99 20                32  56217
DB9A 4B                75  56218  K
DB9B 65               101  56219  e
DB9C 79               121  56220  y
DB9D 73               115  56221  s
DB9E 20                32  56222
DB9F 41                65  56223  A
DBA0 6E               110  56224  n
DBA1 64               100  56225  d
DBA2 20                32  56226
DBA3 54                84  56227  T
DBA4 68               104  56228  h
DBA5 65               101  56229  e
DBA6 0D                13  56230
DBA7 53                83  56231  S
DBA8 70               112  56232  p
DBA9 61                97  56233  a
DBAA 63                99  56234  c
DBAB 65               101  56235  e
DBAC 20                32  56236
DBAD 42                66  56237  B
DBAE 61                97  56238  a
DBAF 72               114  56239  r
DBB0 20                32  56240
DBB1 54                84  56241  T
DBB2 6F               111  56242  o
DBB3 20                32  56243
DBB4 4D                77  56244  M
DBB5 61                97  56245  a
DBB6 6B               107  56246  k
DBB7 65               101  56247  e
DBB8 20                32  56248
DBB9 53                83  56249  S
DBBA 75               117  56250  u
DBBB 72    GBAN       114  56251  r
DBBC 65               101  56252  e
DBBD 20                32  56253
DBBE 54                84  56254  T
DBBF 68               104  56255  h
DBC0 65               101  56256  e
DBC1 79               121  56257  y
DBC2 20                32  56258
DBC3 41                65  56259  A
DBC4 6C               108  56260  l
DBC5 6C               108  56261  l
DBC6 20                32  56262
DBC7 57                87  56263  W
DBC8 6F               111  56264  o
DBC9 72               114  56265  r
DBCA 6B               107  56266  k
DBCB 2E                46  56267  .
DBCC 20                32  56268
DBCD 50                80  56269  P
DBCE 72    GBAN       114  56270  r
DBCF 65               101  56271  e
DBD0 73               115  56272  s
DBD1 73               115  56273  s
DBD2 20                32  56274
DBD3 41                65  56275  A
DBD4 6C               108  56276  l
DBD5 6C               108  56277  l
DBD6 20                32  56278
DBD7 34                52  56279  4
DBD8 31                49  56280  1
DBD9 20                32  56281
DBDA 4B                75  56282  K
DBDB 65               101  56283  e
DBDC 79               121  56284  y
DBDD 73               115  56285  s
DBDE 20                32  56286
DBDF 41                65  56287  A
DBE0 6E               110  56288  n
DBE1 64               100  56289  d
DBE2 20                32  56290
DBE3 54                84  56291  T
DBE4 68               104  56292  h
DBE5 65               101  56293  e
DBE6 20                32  56294
DBE7 53                83  56295  S
DBE8 70               112  56296  p
DBE9 61                97  56297  a
DBEA 63                99  56298  c
DBEB 65               101  56299  e
DBEC 20                32  56300
DBED 42                66  56301  B
DBEE 61                97  56302  a
               114  56303  r
```

DBE5	65	101	56293	e
DBE6	20	32	56294	
DBE7	53	83	56295	S
DBE8	70	112	56296	p
DBE9	61	97	56297	a
DBEA	63	99	56298	c
DBEB	65	101	56299	e
DBEC	20	32	56300	
DBED	42	66	56301	B
DBEE	61	97	56302	a
DBEF	72	114	56303	r
DBF0	2C	44	56304	,
DBF1	20	32	56305	
DBF2	4F	79	56306	O
DBF3	6E	110	56307	n
DBF4	65	101	56308	e
DBF5	20	32	56309	
DBF6	41	65	56310	A
DBF7	74	116	56311	t
DBF8	20	32	56312	
DBF9	41	65	56313	A
DBFA	20	32	56314	
DBFB	54	84	56315	T
DBFC	69	105	56316	i
DBFD	6D	109	56317	m
DBFE	65	101	56318	e
DBFF	2C	44	56319	,
DC00	20	32	56320	
DC01	41	65	56321	A
DC02	6E	110	56322	n
DC03	64	100	56323	d
DC04	0D	13	56324	
DC05	45	69	56325	E
DC06	76	118	56326	v
DC07	65	101	56327	e
DC08	72	114	56328	r
DC09	79	121	56329	y
DC0A	20	32	56330	
DC0B	4B	75	56331	K
DC0C	65	101	56332	e
DC0D	79	121	56333	y
DC0E	20	32	56334	
DC0F	41	65	56335	A
DC10	6E	110	56336	n
DC11	64	100	56337	d
DC12	20	32	56338	
DC13	54	84	56339	T
DC14	68	104	56340	h
DC15	65	101	56341	e
DC16	20	32	56342	
DC17	53	83	56343	S
DC18	70	112	56344	p
DC19	61	97	56345	a
DC1A	63	99	56346	c
DC1B	65	101	56347	e
DC1C	20	32	56348	
DC1D	42	66	56349	B
DC1E	61	97	56350	a
DC1F	72	114	56351	r
DC20	0D	13	56352	
DC21	53	83	56353	S
DC22	68	104	56354	h
DC23	6F	111	56355	o
DC24	75	117	56356	u
DC25	6C	108	56357	l
DC26	64	100	56358	d
DC27	20	32	56359	
DC28	50	80	56360	P
DC29	72	114	56361	r
DC2A	6F	111	56362	o
DC2B	64	100	56363	d
DC2C	75	117	56364	u
DC2D	63	99	56365	c
DC2E	65	101	56366	e
DC2F	20	32	56367	
DC30	41	65	56368	A
DC31	20	32	56369	
DC32	27	39	56370	'
DC33	42	66	56371	B
DC34	65	101	56372	e
DC35	65	101	56373	e
DC36	70	112	56374	p
DC37	27	39	56375	'
DC38	2E	46	56376	.
DC39	20	32	56377	
DC3A	49	73	56378	I
DC3B	66	102	56379	f
DC3C	20	32	56380	
DC3D	41	65	56381	A
[illegible]	[illegible]	110	56382	n

```
DC24 75          117 56356 u
DC25 6C          108 56357 l
DC26 64          100 56358 d
DC27 20           32 56359
DC28 50           80 56360 P
DC29 72          114 56361 r
DC2A 6F          111 56362 o
DC2B 64          100 56363 d
DC2C 75          117 56364 u
DC2D 63           99 56365 c
DC2E 65          101 56366 e
DC2F 20           32 56367
DC30 41           65 56368 A
DC31 20           32 56369
DC32 27           39 56370 '
DC33 42           66 56371 B
DC34 65          101 56372 e
DC35 65          101 56373 e
DC36 70          112 56374 p
DC37 27           39 56375 '
DC38 2E           46 56376 .
DC39 20           32 56377
DC3A 49           73 56378 I
DC3B 66          102 56379 f
DC3C 20           32 56380
DC3D 41           65 56381 A
DC3E 6E          110 56382 n
DC3F 79          121 56383 y
DC40 20           32 56384
DC41 44           68 56385 D
DC42 6F          111 56386 o
DC43 20           32 56387
DC44 4E           78 56388 N
DC45 6F          111 56389 o
DC46 74          116 56390 t
DC47 2C           44 56391 ,
DC48 20           32 56392
DC49 54           84 56393 T
DC4A 68          104 56394 h
DC4B 69          105 56395 i
DC4C 73          115 56396 s
DC4D 20           32 56397
DC4E 54           84 56398 T
DC4F 65          101 56399 e
DC50 73          115 56400 s
DC51 74          116 56401 t
DC52 20           32 56402
DC53 48           72 56403 H
DC54 61           97 56404 a
DC55 73          115 56405 s
DC56 20           32 56406
DC57 46           70 56407 F
DC58 61           97 56408 a
DC59 69          105 56409 i
DC5A 6C          108 56410 l
DC5B 65          101 56411 e
DC5C 64          100 56412 d
DC5D 2E           46 56413 .
DC5E 20           32 56414
DC5F 49           73 56415 I
DC60 66          102 56416 f
DC61 41           65 56417 A
DC62 6C          108 56418 l
DC63 6C          108 56419 l
DC64 20           32 56420
DC65 34           52 56421 4
DC66 31           49 56422 1
DC67 20           32 56423
DC68 4B           75 56424 K
DC69 65          101 56425 e
DC6A 79          121 56426 y
DC6B 73          115 56427 s
DC6C 20           32 56428
DC6D 41           65 56429 A
DC6E 6E          110 56430 n
DC6F 64          100 56431 d
DC70 20           32 56432
DC71 54           84 56433 T
DC72 68          104 56434 h
DC73 65          101 56435 e
DC74 20           32 56436
DC75 53           83 56437 S
DC76 70          112 56438 p
DC77 61           97 56439 a
DC78 63           99 56440 c
DC79 65          101 56441 e
DC7A 20           32 56442
DC7B 42           66 56443 B
DC7C 61           97 56444 a
```

```
DC70 20          32 56432
DC71 54          84 56433 T
DC72 68         104 56434 h
DC73 65         101 56435 e
DC74 20          32 56436
DC75 53          83 56437 S
DC76 70         112 56438 p
DC77 61          97 56439 a
DC78 63          99 56440 c
DC79 65         101 56441 e
DC7A 20          32 56442
DC7B 42          66 56443 B
DC7C 61          97 56444 a
DC7D 72         114 56445 r
DC7E 20          32 56446
DC7F 44          68 56447 D
DC80 6F         111 56448 o
DC81 50          80 56449 P
DC82 72         114 56450 r
DC83 6F         111 56451 o
DC84 64         100 56452 d
DC85 75         117 56453 u
DC86 63          99 56454 c
DC87 65         101 56455 e
DC88 20          32 56456
DC89 41          65 56457 A
DC8A 20          32 56458
DC8B 27          39 56459 '
DC8C 42          66 56460 B
DC8D 65         101 56461 e
DC8E 65         101 56462 e
DC8F 70         112 56463 p
DC90 27          39 56464 '
DC91 2C          44 56465 ,
DC92 20          32 56466
DC93 54          84 56467 T
DC94 68         104 56468 h
DC95 69         105 56469 i
DC96 73         115 56470 s
DC97 20          32 56471
DC98 54          84 56472 T
DC99 65         101 56473 e
DC9A 73         115 56474 s
DC9B 74         116 56475 t
DC9C 20          32 56476
DC9D 48          72 56477 H
DC9E 61          97 56478 a
DC9F 73         115 56479 s
DCA0 20          32 56480
DCA1 50          80 56481 P
DCA2 61          97 56482 a
DCA3 73         115 56483 s
DCA4 73         115 56484 s
DCA5 65         101 56485 e
DCA6 64         100 56486 d
DCA7 2E          46 56487 .
DCA8 20          32 56488
DCA9 49          73 56489 I
DCAA 66         102 56490 f
DCAB 20          32 56491
DCAC 54          84 56492 T
DCAD 65         101 56493 e
DCAE 73         115 56494 s
DCAF 74         116 56495 t
DCB0 20          32 56496
DCB1 46          70 56497 F
DCB2 61          97 56498 a
DCB3 69         105 56499 i
DCB4 6C         108 56500 l
DCB5 65         101 56501 e
DCB6 64         100 56502 d
DCB7 2C          44 56503 ,
DCB8 20          32 56504
DCB9 43          67 56505 C
DCBA 68         104 56506 h
DCBB 65         101 56507 e
DCBC 63          99 56508 c
DCBD 6B         107 56509 k
DCBE 0D          13 56510
DCBF 54          84 56511 T
DCC0 68         104 56512 h
DCC1 65         101 56513 e
DCC2 20          32 56514
DCC3 4B          75 56515 K
DCC4 65         101 56516 e
DCC5 79         121 56517 y
DCC6 62          98 56518 b
DCC7 6F         111 56519 o
DCC8 61          97 56520 a
```

```
DCB1 46          70 56497 F
DCB2 61          97 56498 a
DCB3 69         105 56499 i
DCB4 6C         108 56500 l
DCB5 65         101 56501 e
DCB6 64         100 56502 d
DCB7 2C          44 56503 ,
DCB8 20          32 56504
DCB9 43          67 56505 C
DCBA 68         104 56506 h
DCBB 65         101 56507 e
DCBC 63          99 56508 c
DCBD 6B         107 56509 k
DCBE 0D          13 56510
DCBF 54          84 56511 T
DCC0 68         104 56512 h
DCC1 65         101 56513 e
DCC2 20          32 56514
DCC3 4B          75 56515 K
DCC4 65         101 56516 e
DCC5 79         121 56517 y
DCC6 62          98 56518 b
DCC7 6F         111 56519 o
DCC8 61          97 56520 a
DCC9 72         114 56521 r
DCCA 64         100 56522 d
DCCB 20          32 56523
DCCC 49          73 56524 I
DCCD 74         116 56525 t
DCCE 73         115 56526 s
DCCF 65         101 56527 e
DCD0 6C         108 56528 l
DCD1 66         102 56529 f
DCD2 20          32 56530
DCD3 41          65 56531 A
DCD4 6E         110 56532 n
DCD5 64         100 56533 d
DCD6 20          32 56534
DCD7 54          84 56535 T
DCD8 68         104 56536 h
DCD9 65         101 56537 e
DCDA 0D          13 56538
DCDB 44          68 56539 D
DCDC 69         105 56540 i
DCDD 6F         111 56541 o
DCDE 64         100 56542 d
DCDF 65         101 56543 e
DCE0 73         115 56544 s
DCE1 20          32 56545
DCE2 43          67 56546 CR
DCE3 52    res2  82 56547 R6
DCE4 36          54 56548
DCE5 20          32 56549
DCE6 54          84 56550 T
DCE7 68         104 56551 h
DCE8 72         114 56552 r
DCE9 75         117 56553 u
DCEA 20          32 56554
DCEB 43          67 56555 CR
DCEC 52          82 56556 R
DCED 31          49 56557 1
DCEE 33          51 56558 3
DCEF 2E          46 56559 .
DCF0 20          32 56560
DCF1 41          65 56561 A
DCF2 6C         108 56562 l
DCF3 73         115 56563 s
DCF4 6F         111 56564 o
DCF5 20          32 56565
DCF6 43          67 56566 C
DCF7 68         104 56567 h
DCF8 65         101 56568 e
DCF9 63          99 56569 c
DCFA 6B         107 56570 k
DCFB 55          85 56571 U
DCFC 33          51 56572 3
DCFD 2C          44 56573 ,
DCFE 20          32 56574
DCFF 54          84 56575 T
DD00 68         104 56576 h
DD01 65         101 56577 e
DD02 20          32 56578
DD03 53          83 56579 S
DD04 43          67 56580 C
DD05 4C          76 56581 L
DD06 44          68 56582 D
DD07 20          32 56583
DD08 43          67 56584 C
DD09 68         104 56585 h
```

```
DCFE 20              32 56574
DCFF 54              84 56575  T
DD00 68             104 56576  h
DD01 65             101 56577  e
DD02 20              32 56578
DD03 53              83 56579  S
DD04 43              67 56580  C
DD05 4C              76 56581  L
DD06 44              68 56582  D
DD07 20              32 56583
DD08 43              67 56584  C
DD09 68             104 56585  h
DD0A 69             105 56586  i
DD0B 70   stk$      112 56587  p.
DD0C 2E              46 56588
DD0D 20              32 56589
DD0E 54              84 56590  T
DD0F 6F             111 56591  o
DD10 20              32 56592
DD11 45              69 56593  E
DD12 78             120 56594  x
DD13 69             105 56595  i
DD14 74             116 56596  t
DD15 20              32 56597
DD16 54              84 56598  T
DD17 65             101 56599  e
DD18 73             115 56600  s
DD19 74             116 56601  t
DD1A 2C              44 56602  ,
DD1B 50              80 56603  P
DD1C 72    GBAN     114 56604  r
DD1D 65             101 56605  e
DD1E 73             115 56606  s
DD1F 73             115 56607  s
DD20 20              32 56608
DD21 43              67 56609  C
DD22 41              65 56610  A
DD23 50              80 56611  P
DD24 53              83 56612  S
DD25 20              32 56613
DD26 53              83 56614  S
DD27 48              72 56615  H
DD28 49              73 56616  I
DD29 46              70 56617  F
DD2A 54              84 56618  T
DD2B 20              32 56619
DD2C 41              65 56620  A
DD2D 6E             110 56621  n
DD2E 64             100 56622  d
DD2F 20              32 56623
DD30 54              84 56624  T
DD31 68             104 56625  h
DD32 65             101 56626  e
DD33 20              32 56627
DD34 42              66 56628  B
DD35 52              82 56629  R
DD36 45              69 56630  E
DD37 41              65 56631  A
DD38 4B              75 56632  K
DD39 0D              13 56633
DD3A 4B              75 56634  K
DD3B 65             101 56635  e
DD3C 79             121 56636  y
DD3D 20              32 56637
DD3E 41              65 56638  A
DD3F 74             116 56639  t
DD40 20              32 56640
DD41 54              84 56641  T
DD42 68             104 56642  h
DD43 65             101 56643  e
DD44 20              32 56644
DD45 53              83 56645  S
DD46 61              97 56646  a
DD47 6D             109 56647  m
DD48 65             101 56648  e
DD49 20              32 56649
DD4A 54              84 56650  T
DD4B 69             105 56651  i
DD4C 6D             109 56652  m
DD4D 65             101 56653  e
DD4E 2E              46 56654  .
```

By: Carl Miles
Version 1.0
August 19, 1985

Keyboard Tester

Entry:

Flag at (5CB0) determines if was a main menu selection or a automatic selection.

Exit

Tests all keys on T/S 2068.

Source Code: Entry: (RAM: DD4F) (EPROM:)

```
DD4F ->  LD BC,01E7      ; BC=length of title screen
         LD DE,0B68      ; DE=address of title screen
         CALL 0B37       ; Print string with CLS
         CALL 090A       ; Wait for a key press
Loop (DD5B) -> CALL kbsc (02B0)  ; get keyboard status
         INC E           ; make E overflow
         XOR A           ; clear A
         CP E            ; is E=0? (No key pressed)
         JR Z,loop       ; yes - re-scan
         LD A,7D         ; no key pressed - A=Exponent
         LD BC,CDCC      ; BC & DE = Mantissa for
         LD DE,CC4C      ; the length of Beep, 0.1 sec.
         CALL stk5 (2E74)  ; now stack it
         XOR A           ; clear A - Pitch of 0
         CALL stka (30E6)  ; stack it
         CALL beep (0436)  ; Now BEEP 0.1,0
         CALL brek (2609)  ; Get CAPS/BREAK STATUS
         JR C,loop       ; Not being pressed - re-scan
         LD A,(5CB0)     ; break pressed - get flag
         AND A           ; Is flag 0?
         JP NZ,(joystick test)  ; No - Jump to joystick test
         JP 0187 (main menu)    ; Yes - Jump to Main Menu
```

5

36 -8 -8 -8 -8 ↓ Break out

3 +8 +8 +8 +8

36 — Sub ——> subroutine

Keyboard
10185

Keyboard 10/28/85

~~LD BC~~

```
CALL 02B0
LD B,00
LD C,E
RET
```

key list =

0 = B	28 - 2
1 H	29 - W
2 Y	30 - S
3 6	31 - Z
4 5	32 - Break / Space
5 T	33 - ENTER
6 G	34 - P
7 V	35 - Ø
8 N	36 - 1
9 J	37 - Q
10 U	38 - A
11 7	39 - SHIFT (CAPS)
12 4	
13 R	255 = No key Pressed
14 F	
15 C	
16 M	
17 K	
18 I	36 = 100100
19 8	~~28 = 111~~
20 3	28 = 011100
21 E	28 20 12 4
22 D	36 - 8 - 8 - 8 - 8 (Dec one)
23 X	3 + 8 + 8 + 8 + 8 (Inc by 2)
24 SYM SFT	37 - 8 - 8 - 8 - 8
25 L	
26 O	
27 9	

C = Number to check / keyboard

10/28/85

```
        LD B,5          ;do 5 times
loop:   PUSH BC         ;save count/number
        CALL 0BB0       ;get keyboard status
        POP BC          ;restore number
        LD A,E          ;put keyboard result in 'A'
        CP C            ;ARE they the same?
        JR Z,outloop    ;yes-continue loop
        CP FF           ;NO-isit no key pressed?
        JR Z,loop       ;reloop until a key is pressed
CALL Break  ~~CALL Break~~      ~~;get SHIFT/BREAK status~~
Ret NC      ~~RET NC~~          ~~;yes Break pressed (No carry = Yes)~~
JP loop     ~~jmp loop~~        ~~;not a valid key, rescan~~
            ~~AND A~~           ~~;reset carry flag~~
            ~~RET~~             ~~;and Return (NC = error - failed)~~
outloop:    SUB C,8         ;dec C by 8
            ~~DJNZ,loop~~       ~~;and recheck~~
            ~~CALL~~
            ~~PUSH AF~~
            ~~PUSH BC~~
            ~~PUSH DE~~
            ~~PUSH HL~~
            ~~CALL wait~~
```

for addition, this would be:

```
ADD C,8     DJNZ,loop       ;and recheck/rescan
            SCF             ;set carry flag (all ok!)
            RET             ;and return
```

36 = 1ST - Subtract
3 = 2ND - Add
37 = 3RD - Subtract
2 = 4TH - Add
38 = 5TH - Subtract
1 = 6TH - Add
39 = 7TH - Subtract
0 = 8TH - Add

Now check RIGHT SHIFT (CAPS) and the SPACE BAR.

986C Keyboard 10/28/85

```
        LD BC,
        LD DE,
        CALL 00A4
        LD C, 24h       ;First Row (1-5)
        CALL test (995F) ;test all 5 keys (subtraction)
        JR NC,fail (991F) ;if (NC), then failed
        LD C, 3h        ;second Row (6-0)
        CALL test+1(9994);(addition)
        JR NC,fail
        LD C, 25h       ;thrid row (Q-T)
        CALL test       ;(subtraction)
        JR NC,fail
        LD C,2          ;fourth row (Y-P)
        CALL test1      ;(~~subtraction~~) (addition)
        JR NC,fail
        LD C,26h        ;fifth row (A-G)
        CALL test       ;(~~addition~~) (subtraction)
        JR NC,fail
        LD C,1          ;sixth row (H-ENTER)
        CALL test1      ;(~~subtraction~~ (addition)
        JR NC,fail
        LD C,27h        ;seventh row (CAPS SHIFT-V)
        CALL test       ;(subtraction)
        JR NC,fail
        LD C,00         ;eighth row (B-Space (BREAK))
        CALL test1      ;(addition)
        JR NC,fail
looper: CALL keyboard   ;get keyboard
(98AD)  LD A,27h        ;check CAPS SHIFT
        CP E            ;are they the same?
        JR Z, passer    ;yes-continue
        LD A,FF         ;no- is no key pressed?
        CP E            ;check it
        JR Z,looper     ;yes-no key pressed- reloop
        CALL Break (1F54)
(98BD) -> JR NC,fail
        JP looper
```

```
passer:   CALL keyboard
(98C1)    LD A, 20h
          CP E
          JR Z, finished
          LD A, FF
98D1      CP E
          JR Z, passer
          CALL Break
          JR NC, fail (991F)
          JP passer
```

Cont on page 2

~~finished~~ → ~~PASSED!!~~

~~fail~~ → ~~failed!!~~

Enter: C = Number of key to test

```
finis:    Push BC
~~finished~~ CALL keyboard          ; get keyboard
Pop BC    LD A, C                   ; test for a key with SHIFT
          CP E                      ; do it now!
          JR Z, ok1                 ; yes - is pressed
~~ok2~~   LD A, FF                  ; check if no key pressed
          CP E                      ; do it now
          JR Z, finished            ; if yes - re scan
ok2       CALL break                ; check if break is pressed
(9947)    JR NC, fail               ; otherwish, keboard failed
          JP finished               ; re loop if everything ok
ok1       LD A, 27h                 ; check for CAPS LOCK SHIFT
(994E)    CP D                      ; do it now!
          JR Z, next1               ; passed - get out
          ~~JR ok2~~                ~~otherwish, re scan~~
          LD A, FF
          CP D                      } is no-key pressed
          JR Z, finished            } or only one pressed?
          JR ok2                    - re scan
next1     scf                       ; set carry flag (all OK!)
(995A)    RET                       ; ant Return
```

SHIFT (9939)

11/9/85

finished (9805)

```
LD B,4          (test SHIFT/5)
CALL SHIFT      ;test now
JR NC,fail      ;if (NC), then failed
LD C,3          (test for SHIFT/6)
CALL SHIFT
JR NC,fail
LD C,6h         (test SHIFT/7)
CALL SHIFT
JR NC,fail
LD C,13h        (test SHIFT/8)
CALL SHIFT
JR NC,fail
LD C,10h        (test for SYM SFT/M or '.').
CALL SYMBOL
JR NC,fail
LD C,7          (test for '/' or SYM SHIFT/V)
CALL SYMBOL
JR NC,fail
LD C,9          (test for '-' or SYM SHIFT/J)
CALL SYMBOL
JR NC,fail
```

passed: ——— PASSED!!!

Fail ——→ FAILED!!

Passed: (9906)

```
LD BC,
LD DE,
CALL 00B0
CALL 00E8 (cont)
CALL 00BC (beep)
CALL 00DB (wait)
XOR A
LD (5CB0),A     } Reset Auto Flag
JP Main         } goto main menu
```

out:

(9915)

fail
(99/F)

```
LD BC
LD DE
CALL 00BC
LD BC,
LD DE,
CALL 00BC
CALL 00[illegible] (cont)
CALL 00CB (beef)
JR out (99/F)
```

By: Carc Meces

11/9/85

Keyboard Version ART 1.0

```
LD BC,
LD DE,
CALL 00A4          ; Print out title screen
LD C,24h           (test five keys in 1-5 Row)
CALL test          ;subtraction test
LD C,3h            ; row 6-0
CALL test1         ; addition test
(995F)
```

TEST SUBROUTINE

```
LD B,5             ;do 5 times
loop: PUSH BC      ;save count/number
(9961) CALL 0038   ; get keyboard status
POP BC             ; restore BC
LD A,E             ; put keyboard result into 'A'
CP C               ; are they the same?
JR Z,outloop       ;yes - continue loop
CP FF              ;no - is it no key pressed?
JR Z,loop          ;reloop until a key IS pressed
CALL Break         ;set SHIFT/BREAK status
RET NC             ;yes, Break pressed (No Carry = Yes)
JP Loop            ; not a valid key, rescan
outloop: CALL Beep ; beep 0.1, 0
(9974) SUB C,8h    ; decrease 'C' by 8
DJNZ, loop         ; and rescan
SCF                ; set carry flag (all OK!!)
RET                ; and return
```

BEEP SUBROUTINE

(9a7F)

```
~~LD A, 7D~~ ~~Exponent~~
~~LD BC~~
PUSH BC            ;save count/number
LD A,7D            ;exponent
LD BC,0DCC         ; mantissia (low part)
LD DE,CC4C         ; mantissia (high part)
CALL stack5        ; (Stack floating point)
```

2: 998C

```
XOR A          ;pitch of zero
CALL stackA    ;stack A 'D'
CALL beep      ;and beep it
POP BC         ;restore BC
RET            ;return
```

(9994) TEST1 SUBROUTINE:

Same as TEST except at outloop, put an ADD C,8 instruction.

loop: (9996)

outloop: (99A9)

END

~~998C~~

SYM SHIFT: [998C]

```
Push BC
CALL keyboard
POP BC
LD A,C
CP E
JR Z,ok1
LD A,FF
CP E
JR Z,sym
CALL BEEAR
JR NC,fail
JR sym
LD A,12
CP D
JR Z,next1
LD A,FF
```

ok2 (99C2)

ok1 (99CA)

```
JR Z,sym
JR ok2
next1 CALL beeper
SCF
RET
```

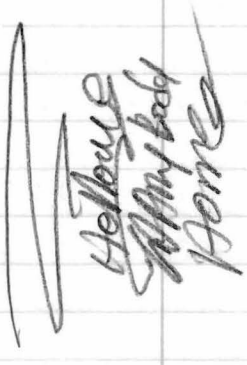
(99D5)

End = 99DA

All functions Test

99DA → LD A, 01 ; flag = 1
LD (5CB0), A ; set flag
JP RAM- ; and ; jump to RAM test

End = 99E2



ZX-Spectrum LROS Tester Program

INIT:

To Boot up Spectrum From cartridge

```
386E   DI
       XOR A
       LD DE,FFFF
       JP 11CB
```

START HEADER Bytes

```
0000 - FF (not Used)
0001 - 01  LROS cartridge
0002 - 6E  } Jump to 386E
0003 - 38  } Boot up Spectrum
0004 - FC  - Chunks (0-1) active
0005 - FF
0006 - FF  } (Not Used)
0007 - FF
```

TESTS:

RAM (48 K HOME RAM)
ROM (16 K HOME ROM & 8K EXTENSION ROM)
CPU
SCLD
SYSTEM BUSS CONNECTOR
CARTRIDGE CONNECTOR
SOUND GENERATOR/SPEAKER
VIDEO CIRCUITS
CASSETTE READ/WRITE
JOYSTICK CONNECTORS

AROS Boot-Up

8000	2	
8001	2	8/128
8002/3	Start Address	~~128~~/143
8004	~~2~~ 143	
8005	~~00~~ 1	
800617	0/21	

~~8008~~ EI
~~8009~~ Call cls-
~~800C~~ LD A, 0F
LD (atrp), A
(atrt), A
(bord), A
LD A, 02
OUT (FE), A
~~CALL 80A9~~
LD A, 02
CALL chop
LD A, 00
OUT (FF), A
~~CALL B704~~

```
936B 00          NOP
936C 00          NOP
936D 00          NOP
936E 00          NOP
936F 00          NOP
9370 00          NOP
9371 00          NOP
9372 011800      LD BC,0018
9375 119C3A      LD DE,3A9C
9378 CDA400      CALL 00A4
937B 016600      LD BC,0066
937E 110080      LD DE,8000
9381 21E913      LD HL,13E9
9384 EDB0        LDIR
9386 C30080      JP 8000
9389 303D        JR NC,93C8
938B C33480      JP 8034
938E 0604        LD B,04
9390 3E10        LD A,10
9392 57          LD D,A
9393 D3F4        OUT (F4),A
9395 DBF4        IN A,(F4)
9397 BA          CP D
9398 2048        JR NZ,93E2
939A CB27        SLA A
939C 10F4        DJNZ,9392
939E 3EFF        LD A,FF
93A0 57          LD D,A
93A1 D3F4        OUT (F4),A
93A3 DBF4        IN A,(F4)
93A5 BA          CP D
93A6 203A        JR NZ,93E2
93A8 D9          EXX
93A9 79          LD A,C
93AA D9          EXX
93AB D3F4        OUT (F4),A
93AD 012600      LD BC,0026
93B0 11B43A      LD DE,3AB4
93B3 CDB000      CALL 00B0
93B6 CDE800      CALL 00E8
93B9 CDBD00      CALL 00BD
93BC CDD300      CALL 00D3
93BF CDE300      CALL 00E3
93C2 C25914      JP NZ,1459
93C5 C34800      JP 0048
93C8 011C00      LD BC,001C
93CB 11B43A      LD DE,3AB4
93CE CDB000      CALL 00B0
93D1 011B00      LD BC,001B
93D4 11DA3A      LD DE,3ADA
93D7 CDB000      CALL 00B0
93DA CDE800      CALL 00E8
93DD CDCB00      CALL 00CB
93E0 18DA        JR 93BC
93E2 D9          EXX
93E3 79          LD A,C
93E4 D9          EXX
93E5 D3F4        OUT (F4),A
93E7 18DF        JR 93C8
93E9 F3          DI
93EA DBFF        IN A,(FF)
93EC 4F          LD C,A
93ED AF          XOR A
93EE 0608        LD B,08
93F0 57          LD D,A
93F1 D3FF        OUT (FF),A
93F3 DBFF        IN A,(FF)
93F5 BA          CP D
93F6 201E        JR NZ,9416
93F8 3C          INC A
93F9 57          LD D,A
93FA D3FF        OUT (FF),A
93FC DBFF        IN A,(FF)
93FE BA          CP D
93FF 2015        JR NZ,9416
9401 CB27        SLA A
9403 10F4        DJNZ,93F9
9405 3EFF        LD A,FF
9407 57          LD D,A
9408 D3FF        OUT (FF),A
940A DBFF        IN A,(FF)
940C BA          CP D
940D 2007        JR NZ,9416
940F 79          LD A,C
9410 D3FF        OUT (FF),A
9412 37          SCF
9413 C38913      JP 1389
```

93D2

Change to '3'

Error

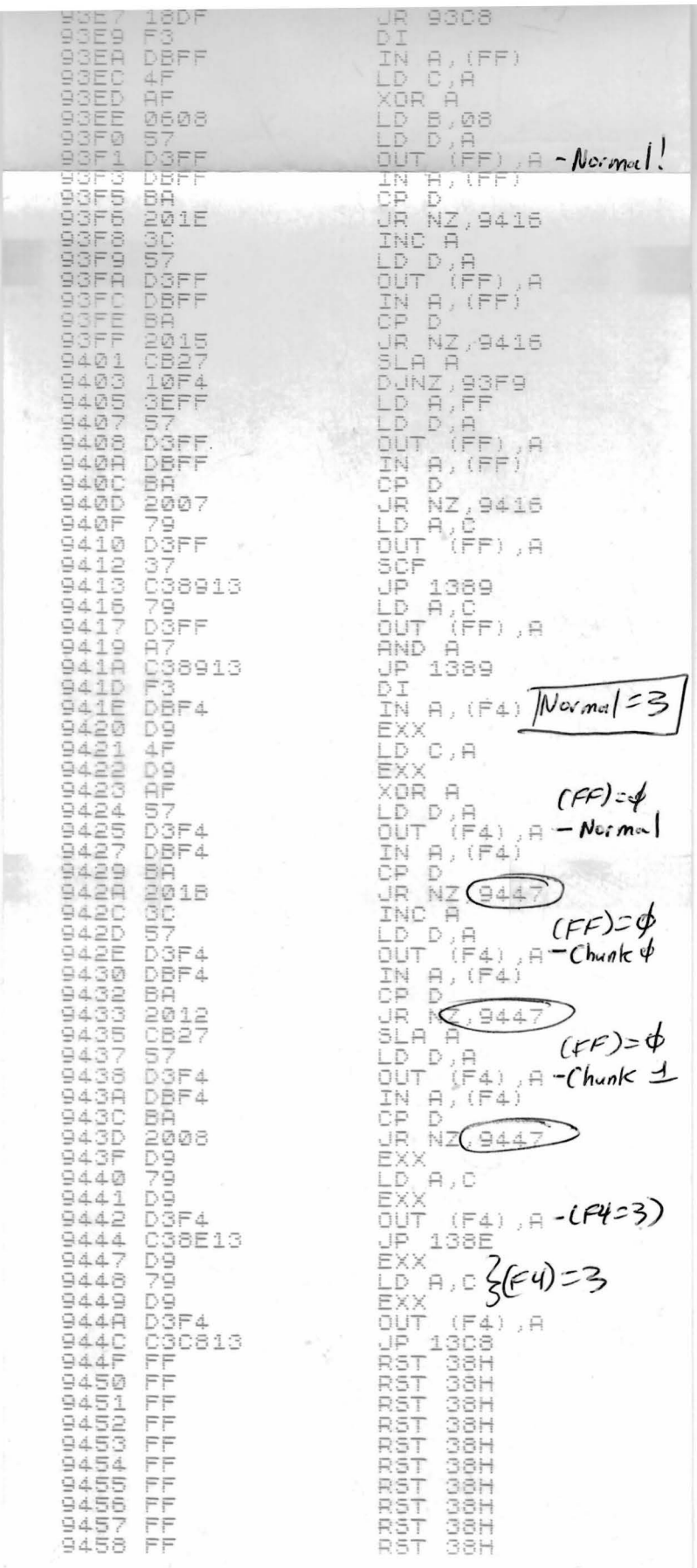
93EC

Cannot Do an 'FF'

Use '73'

93E (Chunks 0-1, 4-7)

USE '73' (Chunks 0-1) (Chunks 4-6)

- Normal!

```
93E7 18DF       JR 93C8
93E9 F3         DI
93EA DBFF       IN A,(FF)
93EC 4F         LD C,A
93ED AF         XOR A
93EE 0608       LD B,08
93F0 57         LD D,A
93F1 D3FF       OUT (FF),A
93F3 DBFF       IN A,(FF)
93F5 BA         CP D
93F6 201E       JR NZ,9416
93F8 3C         INC A
93F9 57         LD D,A
93FA D3FF       OUT (FF),A
93FC DBFF       IN A,(FF)
93FE BA         CP D
93FF 2015       JR NZ,9416
9401 CB27       SLA A
9403 10F4       DJNZ,93F9
9405 3EFF       LD A,FF
9407 57         LD D,A
9408 D3FF       OUT (FF),A
940A DBFF       IN A,(FF)
940C BA         CP D
940D 2007       JR NZ,9416
940F 79         LD A,C
9410 D3FF       OUT (FF),A
9412 37         SCF
9413 C38913     JP 1389
9416 79         LD A,C
9417 D3FF       OUT (FF),A
9419 A7         AND A
941A C38913     JP 1389
941D F3         DI
941E DBF4       IN A,(F4)
9420 D9         EXX
9421 4F         LD C,A
9422 D9         EXX
9423 AF         XOR A
9424 57         LD D,A
9425 D3F4       OUT (F4),A
9427 DBF4       IN A,(F4)
9429 BA         CP D
942A 201B       JR NZ,9447
942C 3C         INC A
942D 57         LD D,A
942E D3F4       OUT (F4),A
9430 DBF4       IN A,(F4)
9432 BA         CP D
9433 2012       JR NZ,9447
9435 CB27       SLA A
9437 57         LD D,A
9438 D3F4       OUT (F4),A
943A DBF4       IN A,(F4)
943C BA         CP D
943D 2008       JR NZ,9447
943F D9         EXX
9440 79         LD A,C
9441 D9         EXX
9442 D3F4       OUT (F4),A
9444 C38E13     JP 138E
9447 D9         EXX
9448 79         LD A,C
9449 D9         EXX
944A D3F4       OUT (F4),A
944C C3C813     JP 13C8
944F FF         RST 38H
9450 FF         RST 38H
9451 FF         RST 38H
9452 FF         RST 38H
9453 FF         RST 38H
9454 FF         RST 38H
9455 FF         RST 38H
9456 FF         RST 38H
9457 FF         RST 38H
9458 FF         RST 38H
```